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UNDULANT FEVER IN SCOTLAND

By C. P. Beattie, M.B. Edin., D.P.H.
LECTURER IN BACTERIOLOGY, UNIVERSITY OF EDINBURGH

J. Smith, M.D., D.Sc. Aberd., M.R.C.P. Lond., D.P.H.
LECTURER IN BACTERIOLOGY, UNIVERSITY OF ABERDEEN; BACTERIOLOGIST TO THE CITY AND COUNTY OF ABERDEEN; AND

W. J. Tulloch, O.B.E., M.D. St. And., D.P.H.
PROFESSOR OF BACTERIOLOGY, UNIVERSITY OF ST. ANDREWS

Since the first case of undulant fever due to *Brucella abortus* in Scotland was reported in 1930,[1] a sufficient number of cases have been recorded for an attempt to be made to assess the epidemiological and clinical features of the disease.

We have collected for the Scottish Committee on Bovine Contagious Abortion, partly privately and partly through the Scottish Department of Health, records of 97 cases of undulant fever. This information was obtained by means of questionnaires sent to the doctor in charge of each case. We propose to analyse these records, but before doing so, we wish to review briefly the modes by which infection may be acquired, and to consider how they apply to Scotland.

Infection may be acquired through handling animals or meat products infected with brucella. In this mode of infection the organism is presumed to pass through abrasions in the skin. Hardy and his colleagues [2] have demonstrated in guinea-pigs, and Otero [3] in human volunteers, that it can readily do so.

Brucella infection is common among the livestock of this country. Priestley [4] states that in England no less than 20 per cent. of cattle and 5–15 per cent. of horses are infected. He found no evidence of infection among sheep or swine. Our own experience leads us to believe that the proportion of infected cattle in Scotland is equally great. It is not then surprising to find that the number of cases of undulant fever occurring among persons whose occupation involves the handling of animals or meat is out of proportion to their numerical representation in the population. Thus in our series of 97 cases, 14 were of this class. Ten were farm workers, 2 were butchers, 1 was a milkmaid, and 1 a blacksmith who gave a history of having shod a horse with a disease of its legs shortly before the onset of his illness. Unfortunately no bacteriological investigation was carried out on the horse.

Another particular case among our series was of a bacteriologist. He had worked with cultures of brucella, although not for some considerable time previous to the onset of his illness. But it is possible that his was a laboratory infection.

In Scotland, however, the majority of the population have no direct contact with animals. In their case infection is probably acquired through drinking infected milk, or, less likely, by eating infected butter or cheese. We have previously shown that in Edinburgh 19·8 per cent. of raw milk from single sources contained *Br. abortus*, while in the ordinary mixed retailed milk coming from several sources, the percentage was 34·9.[5] In Aberdeen 28·3 per cent. of raw milk contained *Br. abortus*.[6] Our experience agreed with that of other workers that pasteurisation by the holder method effectively kills the organism. There is thus ample opportunity for contracting infection with *Br. abortus* through the consumption of raw milk. Infection through eating butter or cheese is not probable. For the most part these foods are made with pasteurised milk and one of us, (J. S.)[7] failed to culture *Br. abortus* from 79 samples of butter, 39 samples of margarine, and 26 samples of cheese.

An inquiry into the amount of milk drunk by the patients in our series of cases showed that 18 drank one pint or more a day, 8 drank cream, 21 drank under one pint, while 15 took milk only in tea or coffee, or on puddings or porridge. One inexplicable case was of a patient who had no contact with animals and took milk only in tea or in puddings; then she used pasteurised milk.

We consider that the proportion of undulant fever patients who drink one pint or more of milk a day is much greater than the proportion of the whole population who drink this amount. Nor is it likely that one in twelve of the population drink cream. In an infected milk *Br. abortus* is found in greatest numbers in the cream. The 15 patients who took very little milk represent more fairly the average population.

Among the heavy milk drinkers were eight who used a milk diet for medical reasons. They included two patients suffering from gastric ulcer, one suffering from cirrhotic liver, one with indigestion, and a diabetic whose diet included much cream. For a fortnight shortly before the onset of his illness, one patient, not previously a heavy milk drinker, had been taking three to four pints a day. Two of the patients while at home drank nothing but pasteurised milk. Shortly before the onset of their illness they had been away from home and drank raw milk. It is possible, as Dalrymple-Champneys suggests,[8] that the regular consumption of *Br. abortus* infected milk produces an immunity.

In certain cases an inquiry was made into the infection with *Br. abortus* of the milk-supply from which patients obtained their milk. As a result bacteriological proof of the presence of the organism in the milk was obtained in 23 instances, and in 16 others contagious abortion was found to be present in the herd. In several instances two or more patients were found to obtain their milk from the same source.

Epidemiological Study

Number of cases reported by years.—From 1929 till 1931 there was an increase in the number of cases reported year by year. In the years 1932–33–34 the figures have been almost steady. The numbers reported in the various years were: 1929, 3; 1930, 10; 1931, 13; 1932, 24; 1933, 22; 1934, 24. The date of one patient's illness cannot be exactly determined.

Geographical distribution.—Twelve cases occurred in Edinburgh, 9 in Aberdeen, 5 in Glasgow, 4 in Dundee, 17 in Aberdeenshire, 11 in Fifeshire, 6 in Kincardinshire and in Banffshire, 5 in Angus and in Ross and Cromarty, 4 in Stirlingshire, 2 in Ayrshire and in Invernesshire, and 1 in Moray, Perthshire, Dunbartonshire, Renfrewshire, Dumfriesshire, Roxburghshire, Berwickshire, East Lothian, and in the Stewartry of Kirkcudbright.

Sex incidence.—As in other countries the disease has been found to attack males predominantly. In our series there were 62 males (63·8 per cent.) and 35 females (36·2 per cent.). Hardy and his associates [9] have pointed out that in their series the preponderance

of males was due to their engaging to a greater extent in occupations involving contact with animals. Of all their cases 77 per cent. were males and 23 per cent. females. When they excluded those having contact with livestock or carcasses they found the proportion was 51 per cent. males and 49 per cent. females. We have made a similar exclusion and find that males still predominate, the figures being: males 49 (59 per cent.) and females 34 (41 per cent.).

Age incidence.—This is shown graphically (Fig. 1). It will be seen that our results agree with those of

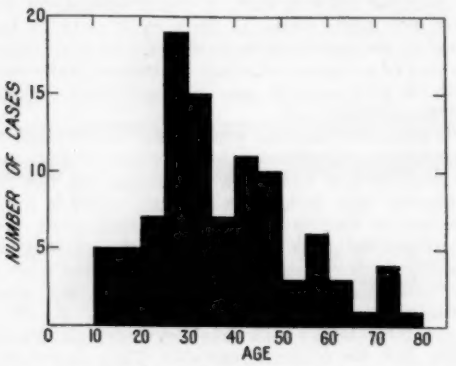

FIG. 1.—Age distribution.

observers in other countries in that the disease affects chiefly young adults.

Occupational incidence.—Apart from the large number of cases that occurred among those handling livestock or meat to whom we have already referred, the only notable feature under this heading was the relatively high proportion of doctors and nurses affected. There were four of each. We are not inclined to consider that this indicates that they run any special occupational risk, but rather that in their cases better facilities are available for diagnosis.

Duration of illness.—In 92 of the cases recorded the duration of illness was ascertained. It varied from 2 to 54 weeks, the average duration being 10 weeks. One patient, the report of whose case has not been used in computing the average duration of illness, has been ill for 108 weeks.

Case-mortality.—In the series there were 5 deaths.

One was of a patient suffering from disseminated sclerosis and was probably not due to undulant fever. Of the others, the first was of a young man, aged 29, whose death after 10 weeks' illness followed on a severe gastric hæmorrhage. This case has already been reported.[10] The second was of an elderly woman, aged 72, who was ill for approximately 44 weeks. About a month before her death she began to show signs of heart failure. The third was of a man, aged 68, who died after 44 weeks of illness. He was found to have pancreatitis, and from his pancreas *Br. abortus* was cultured (Case 2).

The fourth was of a man aged 32. His illness was acute with irregular bouts of fever. Night sweating, headache, and joint and muscle pains were pronounced symptoms. His liver and spleen were both much enlarged, and the presence of free fluid in his abdomen gave rise to the suspicion that he had a tuberculous infection. Laparotomy was therefore carried out. No signs of tuberculosis were present, but he was found to have marked cirrhosis of the liver. The abdomen was drained of free fluid and closed. A week later, seven weeks after the onset of his illness, the patient died. Culture of the free fluid from the abdomen failed to give a growth of *Br. abortus*. In view of the rapid onset of cirrhosis of the liver during an acute attack of undulant fever we feel justified in ascribing this patient's death to undulant fever.

If the patient suffering from disseminated sclerosis is omitted there are four deaths in our series giving a case-mortality of 4·1 per cent.

Bacteriological Investigation

Agglutination tests from patients.—In all cases an agglutination titre for *Br. abortus* of 1 : 100 or more was obtained with the patient's serum. In some cases it was much higher, the highest titre found being in a fatal case when it rose to 1 : 51,000. The titres were as follows:—

Titre.	Number.
1 : 100 – 1 : 199	7
1 : 200 – 1 : 399	7
1 : 400 – 1 : 799	10
1 : 800 – 1 : 1,599	13
1 : 1,600 – 1 : 3,199	21
1 : 3,200 – 1 : 6,399	17
1 : 6,400 – 1 : 12,799	12
1 : 12,800 – 1 : 25,599	6
1 : 25,600 – 1 : 51,000	1
1 : 51,000 –	1

As the agglutination tests were carried out in different laboratories with different antigens and different times and methods of incubation they are not strictly comparable. They demonstrate, however, a preponderance of reactions between the titres of 1 : 800 and 1 : 12,799.

In all cases the usual Widal reaction with *B. typhosus* and *B. paratyphosus* B antigens was also carried out. One patient gave an agglutination reaction with *B. paratyphosus* B antigen in dilution up to 1 : 400 and also with *Br. abortus* antigen in dilution up to 1 : 800. As her clinical condition was more suggestive of paratyphoid, she was considered to be suffering from that condition and is not included in the list. Also excluded is a child suffering from bacillary dysentery, whose serum agglutinated *Br. abortus* in dilutions up to 1 : 200.

Cultural tests from patients.—In some cases cultures of blood, urine, fæces, or organs were carried out. The results were as follows:—

	Cultures.	Positive and per cent.
Blood	51	12 (19·2)
Urine	11	1
Fæces	7	1
Pancreas	1	1
Ascitic fluid	1	0

In every instance the organism isolated was *Br. abortus* There is no evidence of any other member of the genus brucella being present in Scotland.

Clinical Features

We present an analysis of the chief clinical features noted in our cases in the hope that thereby we may assist physicians in recognising the disease. We would, however, give a warning that the absence of any or most of the signs and symptoms recorded should not be taken to exclude the possibility of undulant fever. Few if any diseases are so varied in their manifestation and course. Hughes [11] writes: "So variable are the symptoms and so uncertain is the duration and course of the fever that it is impossible to give a description to which all cases can be referred."

Nature of onset.—In 57·3 per cent. of the cases the onset was said to be insidious. Not atypical of the descriptions received were the following reports:

(1) "I cannot say whether the patient developed undulant fever in January or February of this year. I know that from the end of last year till the beginning of this year she had been feeling out of sorts." (2) "Went to bed March 28th. Not well for a week or two before." (3) "Confined to bed on Sept. 8th

but for fully a month prior to that date had complained of tiredness." (4) "For previous six weeks felt tired and disinterested in work and had loss of appetite."

Of all the cases 42·7 per cent. were said to have been of sudden onset. In only a few cases was detailed information received as to how sudden.

The onset of one patient's illness appears to be of extreme rapidity, but symptoms of illness had been present previously. "She had not felt very well for some days, and while at work she suddenly developed a severe pain in stomach and vomited. She went to bed but pain persisted, and shivering became worse. Was seen about an hour later. She was in bed very collapsed and pale and in the middle of a severe rigor. The pain was referred to the epigastrium."

The percentage incidence of various signs and symptoms is given in Fig. 2.

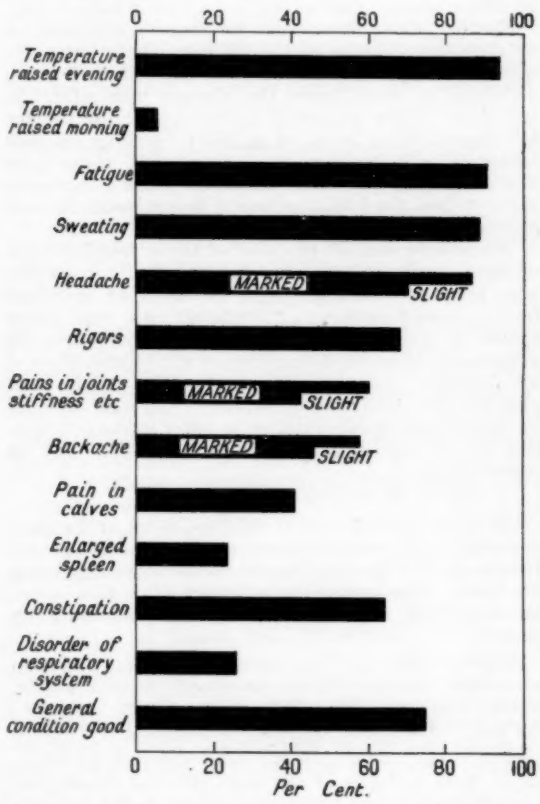

FIG. 2.—Percentage incidence of certain signs and symptoms.

Fever.—In every case fever was present. Generally this was found in the evening although in 6 per cent. of our cases the temperature was raised in the morning. Some of the temperature charts received showed an undulating curve with periods of about a week of high evening temperature followed by two or three days when the temperature was little raised. In others the temperature was raised every evening during the course of the illness. The temperature records received were, however, too few for any accurate estimate to be formed of the type of fever most commonly present.

Fatigue was almost always present and frequently was the most conspicuous symptom. Sometimes it was present all day, but more usually it was present in the afternoon.

Sweating was usually a marked feature. A common history was that the patient had to change his night clothes once or twice during the night.

Headache was commonly present. Often it was occipital but there was no one localisation. At times it was accompanied by pain in the back of the neck which was accentuated when the patient tried to turn or lift his head.

Rigors were noted in 68 per cent. of the cases. Generally they occurred in the afternoon. In a few cases they were reported to be severe, but more usually they consisted in a feeling of chilliness.

Backache, pain in joints, pain in calves, stiffness.—A large number of patients complained of these symptoms. The proportion of cases in which they occurred will be found in the Table. Arthritis was also frequently present. The joints affected were of the shoulder, elbow, hand, and knee.

Respiratory system.—The respiratory disturbances reported were, for the most part, indicative of slight congestion of the lungs. In only 3 cases was a cough reported to be present, and in 2 of these it was accompanied by the expectoration of muco-purulent sputum. One case was at first diagnosed as pleurisy owing to the presence of a severe pain in the side.

Gastro-intestinal system.—No specific inquiry was made as to the presence of abdominal pain. This is recorded in numerous reported cases, and in Hardy's [9] series its frequency was 30 per cent. In the reports we received information of its presence was volunteered in 7 cases. Sometimes it was accompanied by vomiting. Abdominal tenderness was also present in some instances. This was generally felt over the epigastric region, but in one case it was found over the gall-bladder, and in another over the liver. One patient was operated on for a subacute appendicitis. Simpson [12] points out the possibility of brucella infection presenting the characteristics of an acute abdominal condition. He records 94 cases in which cholecystectomy was performed and 26 in which appendectomy was performed. Gilbert and Coleman [13] have found brucella in the bile collected after cholecystectomy.

Loss of appetite was reported in some cases, and we believe it to be a common symptom. It was at times accompanied by a bad taste in the mouth.

In a few cases the intestinal symptoms were the most prominent. We have already stated that one patient died after a severe gastric hæmorrhage. We also record two patients who died of the disease, one of whom had pancreatitis and the other cirrhosis of the liver.

Glandular system.—With three patients the onset of illness was accompanied by a swelling of the cervical glands. This suggests that the infection may have been through the tonsils. The work of Carpenter and Boak [14] who isolated the organism from 8 of 56 pairs of tonsils would support this view, but in Scotland after an examination of 100 pairs of tonsils Milne [15] did not find brucella.

Cutaneous system.—Eight of the patients had a skin rash. This was of a macular, sudaminous, or seborrhœic type, and in one case extended to the mucous membrane of the mouth and throat.

Cardiovascular system.—One patient, an elderly lady, died of heart failure. This was probably a sequel to her long illness. Another patient developed extrasystoles. Anæmia was frequently noted, and in four cases the medical attendant was struck by the yellow colour of the patient. In one case the blood pressure was markedly low, and in two epistaxis occurred.

Neurological system.—In a few cases irritability

was very evident. More frequently the patient was greatly depressed. One patient who subsequently died of the disease was delirous at times. Insomnia was sometimes recorded. Diplopia was present in one instance due to paralysis of the muscles of the left eye.

Relapses occurred in 44 per cent. of the cases, at intervals of from five days to one month. In some cases three or more were reported. This experience differs from those of Hardy [9] and Simpson [12] in the United States of America, who both found relapses in only 15 per cent. of their cases.

General condition.—A notable feature of the disease is that frequently the condition of the patient looks much better than the physician would be led to expect from the height of the temperature. In 75 per cent. of our cases the general condition was good.

In some respects our results agree with those found in other countries, while in others they differ. We give a tabular comparison of the relative frequency of various symptoms and signs as found by Hardy [9] in the United States and by ourselves in Scotland.

	Hardy's results (per cent.).		Our results (per cent.).
Weakness	100	Fatigue	92
Sweating	84	—	88
Headache	62	—	87
Backache	48	—	59
Rigors	66	—	68
Palpable spleen	33	Enlarged spleen	24
Constipation	55	—	64
Relapses	15	—	44

Discussion

An analysis of the cases reported shows that those engaged in employment involving contact with animals or meat ran a special risk of contracting undulant fever. In this category were 14 of our 97 cases, a proportion much greater than that borne by those classes to the population as a whole.

The consumption of infected milk appeared to be responsible for the other cases. Many of them occurred among heavy consumers of milk. A deplorable feature was that 8 patients drank large quantities of milk for medical reasons. We would point out to practitioners that when they order patients to use a milk diet and do not specify that the milk should be pasteurised or boiled, they subject them to a definite risk of contracting undulant fever.

When the milk-supply was investigated, it was found in many cases that the milk contained *Br. abortus* or that the herd was infected with contagious abortion. That in some cases no evidence of infection of the milk-supply was obtained cannot be considered a valid argument against the spread of undulant fever by milk, for there must be few persons who do not take milk at times from another source than their home supply.

It is noteworthy that in the city of Glasgow, where 60 per cent. of the milk is pasteurised by the "holder" process, and 20 per cent. by the "flash" process, only 4 cases of undulant fever are known to have occurred. This accords with Dalrymple-Champneys's [8] findings in London. Out of 198 cases in England and Wales only 9 occurred in London, where over 90 per cent. of the milk is pasteurised. The experience in the United States has been the same. Few cases have been recorded from New York where the bulk of the milk is pasteurised. Even more definite evidence of the value of milk pasteurisation in preventing undulant fever is afforded by the experience of Simpson [16] in Dayton, Ohio. He reported 148 cases of undulant fever in this city and its neighbourhood and brought forward evidence to show that infection was milk borne. Three years ago a compulsory pasteurising order was brought into force. Since then not one case of undulant fever has originated in the city.

Undulant fever may seem not to be a disease of great importance. During the last three years the number of cases reported in Scotland has been a little over 20 each year. But a disease can hardly be considered unimportant which causes on an average 10 weeks of illness and is capable of producing an illness lasting for two years. Nor are we by any means certain that these 20 odd cases a year justly represent the incidence of undulant fever in Scotland. We have been struck by the fact that the reported cases surround centres where the bacteriological investigation of the disease is being carried out. It seems hardly likely that it should be less prevalent in other areas.

Further, from other countries reports are received of ambulatory forms of the disease. They formed a quarter of Hardy's series. We have found none, although in some cases the disease was mild. In not a few of our records it is stated that the patient felt unwell for a week or so before seeking medical attention. It appears not improbable that there are many persons whose undulant fever never goes further than the initial period of fever, lassitude, and aching.

We believe that if all cases of slight febrile illness without obvious cause were investigated a considerable number would prove to be cases of undulant fever. Hardy writes: "Probably no one thing should so influence a physician to consider brucella infection in differential diagnosis as a fever unexplained by positive physical signs." [9] We would ask physicians to submit blood samples from such patients to bacteriological laboratories in order that agglutination and cultural tests for brucella infection may be carried out.

Two Illustrative Cases

We give a brief report of two cases. The first provides a not unusual picture of the course of the disease and of the conditions on the farm supplying the milk. The second is a report of a fatal case. Another fatal case has already been recorded by Marr.[10]

CASE 1.—Girl, aged 15, training for domestic service; no contact with animals or carcasses; raw milk-supply. Illness began on Feb. 18th, 1934. Onset insidious: began with arthritis of right knee, which was accompanied by an evening rise of temperature. After a week the arthritis disappeared and the fever subsided for three days. Then arthritis of the right shoulder began, and the temperature was once more raised in the evening, reaching 100° F. Felt tired in the evening and perspired profusely at night. Appetite good, constipated. No headache or backache. Spleen and liver not enlarged. Had sudaminous and seborrhœic rash on her body, also dull red spots on her chest. General condition good. Illness lasted 20 weeks.

March 16th, 1934: serum agglutinated *Br. abortus* in dilutions up to 1:480 (highest dilution tested); no agglutination with *B. typhosus* or *B. paratyphosus* A or B. March 27th: serum agglutinated *Br. abortus* in dilutions up to 1:3200. March 13th: *Br. abortus* cultured from blood. March 27th: whey taken from supplier's bottle of milk at patient's home agglutinated *Br. abortus* in dilutions up to 1:80. Subsequently *Br. abortus* was cultured from inoculated guinea-pigs.

On investigation of the cows on the farm supplying the milk 6 out of 29 showed definite evidence of *abortus* infection.

CASE 2.—A doctor, aged 68, practising in a country district, took ill about the second week of May, 1933,

with indefinite symptoms, but later for four days from May 20th onwards was confined to bed, the evening temperature being in the region of 101° F. By the 24th he had so far recovered that he could attend to his work, but on June 1st he had a recurrence of fever for nine days. He went away for convalescence and returned on July 1st. On the 8th he had marked abdominal pain, and his evening temperature was 103° F. From this attack he recovered, but on August 1st he had again a recurrence of the fever with severe abdominal pain, headache, and delirium. Within five days the condition subsided and he felt fairly well again. On Dec. 6th, 1933, he again had an attack of abdominal and muscular pain. He remained fairly well until March 23rd, 1934, when he again had recurrence of abdominal pain and fever. He was admitted to a nursing-home, and examination now indicated a small palpable mass in the region of the pancreas. An exploratory operation was performed, and a small tumour was found associated with the pancreas. The tumour was aspirated and blood-stained fluid was obtained. The patient failed to make any headway, and died rather suddenly on March 24th.

Blood samples for the Widal reaction and culture were received from time to time. The first sample received on August 10th, 1933, failed to agglutinate any of the typhoid-paratyphoid group of organisms, but agglutinated *Br. abortus* to a dilution of 1 : 3200. On Sept. 17th the titre of the serum for *Br. abortus* had fallen to 1 : 8000, but when again taken during the course of the final illness on March 23rd, 1934, the titre had risen to 1 : 3200. Culture of the blood specimens under 10 per cent. CO_2 failed to show the presence of any organisms. When, however, the material obtained from the pancreatic abscess was cultured, a profuse growth of a CO_2-sensitive strain of *Br. abortus* was obtained.

Summary

(1) An account is given of 97 cases of undulant fever occurring in Scotland between 1929 and 1934.* (2) Of these, 14 were in persons having contact with animals or meat and may have been acquired by nature of their employment. In the remainder the consumption of infected milk appears to have been the cause of illness. Many of the patients had been heavy milk drinkers, sometimes on medical advice. (3) An analysis of the signs and symptoms of the disease shows their complexity. (4) The disease was most often found among young adults. (5) Males predominated. When those subjected to occupational risk were excluded the proportions were 59 per cent. males and 41 per cent. females. (6) The average duration of illness was 10 weeks. (7) The case-mortality was 4·1 per cent. (8) It appears likely that the milder forms of the disease pass unnoticed.

We express our thanks to the physicians who completed questionnaires regarding their patients and otherwise coöperated in this inquiry. We have made quotations from the information supplied to us by Dr. O. D. Jarvis, Dr. D. C. Glen, Dr. E. R. C. Walker, Dr. J. C. Mackay, Dr. J. S. Caldwell, and Dr. A. W. Hendry. Dr. R. Cruickshank reported to us five cases in which the bacteriological investigation was carried out in his laboratory. For a time the collection of records was in the hands of Dr. H. J. Gibson, to whom we are grateful. Finally we wish to acknowledge the assistance given by the Scottish Committee on Contagious Abortion and the Department of Health for Scotland.

One of us (C. P. B.) was assisted in the work by a grant from the Moray fund for research, Edinburgh University.

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(*Continued at foot of next column*)

*Since this article was submitted for publication there have been received reports of 8 further cases of undulant fever, bringing the total number (since 1929) to 105.

THE HÆMOGLOBIN LEVEL
AMONG LONDON MOTHERS OF THE HOSPITAL CLASS
AND ITS PROBABLE BEARING ON SUSCEPTIBILITY TO INFECTION

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Assisted by LOREL GOODFELLOW

THE prevalence of anæmia due to iron deficiency among infants and young children has caused attention to be focused upon the hæmoglobin level in their mothers. In this paper particulars are given of the results of hæmoglobin estimations in three groups of women, a total of 368 persons. Some of the figures have already been published[1] but the results are further analysed here. The estimations were made with a Haldane hæmoglobinometer from blood obtained from a prick in the lobe of the ear. The standard used latterly was a Price-Jones-Haldane tube,[2] and figures obtained with an earlier hæmoglobinometer have been corrected to correspond with the Price-Jones-Haldane standard.[3]

A GROUP OF NURSING MOTHERS

The first group consists of 50 nursing mothers at different stages of lactation (from the first to the tenth month) whose blood was examined in 1930.[1] Their babies were attending the Mothers' Hospital infant welfare centre. Babies at this centre showed the usual nutritional anæmia when not treated with iron; those who were entirely breast-fed until seven months of age had an average hæmoglobin level at 11–12 months old of 72·5 per cent. (Price-Jones-Haldane standard), which, reckoning the infants' normal as 86 per cent. is 13·5 per cent. below normal. The economic status of the parents varied, but was on the whole fairly good. Some of the fathers were small shopkeepers employing a domestic servant; some were shop assistants or clerks; others were manual workers. Relatively few were unskilled casual labourers. The mothers' ages ranged from 18 to 42; 27 were primiparæ and 23 multiparæ, the latter with an average of 2·9 pregnancies each. The average hæmoglobin level of these women was 82·8 per cent. (Table I.), and in 58 per cent. of them it was below 85 per cent. There was very little difference between primiparæ and multiparæ; the former averaged 83·4 per cent., the latter 82·4 per cent. Taking Price-Jones's average of 98·26 per cent. for healthy women, these mothers averaged 15·5 per cent. below his normal; and on this basis the degree of

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anæmia among them was very similar to the degree of anæmia among twelve-month-old babies with a good breast-feeding history attending this clinic.

A GROUP OF PREGNANT WOMEN AND GIRLS

The second group consisted of 109 pregnant women and girls in homes for unmarried mothers. They came in at different stages of pregnancy, often in the last month, and their previous social circumstances varied greatly. Nearly all were primiparæ, and they were for the most part young; 38 were under 21 years of age and only 6 were 31 years or over—their ages ranged from 14 to 40 years. The hæmoglobin estimations were usually made at 1–2 weeks after admission. Their babies also showed nutritional anæmia. The average hæmoglobin level of the mothers was 83·5 per cent.—i.e., within 1 per cent. of the average of the group of nursing mothers already considered (Table I.). Approximately 60 per cent. of the group had a hæmoglobin level below 85 per cent., which is about the same proportion as among the nursing mothers.

TABLE I.—*Hæmoglobin Level in Women*

Group.	No. of women.	Hæmoglobin percentage.						
		Average.	Lowest.	Highest.	Under 70%	70–84%	85% and over	90% and over.
					No. and per cent.			
Our cases. Nursing mothers ..	50	82·8	66	103	1 (2·0)	28 (56·0)	21 (42·0)	7 (14·0)
Expectant mothers, unmarried.	109	83·5	58	120	5 (4·6)	61 (56·0)	43 (39·4)	28 (25·7)
Mothers at children's hospital.	209	87·2	48	106	6 (2·9)	60 (28·7)	143 (68·4)	83 (39·7)
Above three groups combined.	368	85·5	48	120	12 (3·3)	149 (40·5)	207 (56·3)	118 (32·1)
Price-Jones's cases. Healthy women.*	100	98·26	90	110	0	0	0	100 (100·0)
Aberdeen cases. Women escorts atdispensary.	455	—	19	—	63 (13·8)	150 (33·0)	242 (53·2)	—

* Hospital nurses and women students.

A GROUP OF LONDON MOTHERS AT A CHILDREN'S HOSPITAL

The third group examined consisted of 209 women who had brought children to the out-patient department of the Queen's Hospital for Children, where most of our work on nutritional anæmia in babies has been done. This being a children's hospital only, none of the women attended as patients. They had all borne children. They varied in age from young mothers of 21 attending with a first child, to a grandmother of 61 years. The number of pregnancies through which each woman had passed varied from one to sixteen; 30 women had had eight or more. The time that had elapsed since the last confinement might be short or long, from under one month to thirty years. The economic status of the mothers was, on the whole, considerably worse than that of the nursing mothers attending the Mothers' Hospital. The fathers were for the most part manual workers, and some were out of work. On the other hand, a few were small shopkeepers and in more comfortable circumstances. Nevertheless the average hæmoglobin level of the mothers was slightly higher, namely, 87·2 per cent. as compared with 82·8 per cent. for the nursing mothers at the maternity hospital; of the total approximately 32 per cent. of women had a hæmoglobin level of under 85 per cent. (Table I.). The slightly lower hæmoglobin level of the nursing mothers cannot apparently be attributed to their more recent confinements, for if we select from the group at the Queen's Hospital all those who had been confined within ten months of the date of estimation we have a sub-group of 39 mothers with an average hæmoglobin level of 88·5 per cent.—i.e., a figure closely approximating to the average for the whole group. However, most of these 39 mothers who came to the Queen's Hospital were not breast-feeding their babies, and it is possible that the extra drain of lactation might bring about this difference in hæmoglobin level. Whether or not multiple pregnancies increase the tendency to anæmia is not brought out in these figures; 37 mothers who had been pregnant once only showed an average of 88·2 per cent. hæmoglobin, and 30 mothers, each of whom had been pregnant eight times or more (an average of 10·2 pregnancies each), were only about 3 per cent. lower—i.e., they had an average of 85·0 per cent. hæmoglobin. This comparison, however, does not settle the point, for in order to judge the effect of multiple pregnancies, the hæmoglobin estimation should have been made in every case either during pregnancy or alternatively shortly after confinement; whereas in our cases the estimation was often years after the last confinement. Nor was there much change in the average hæmoglobin level with increasing age (Table II.). The maximum difference between the average for the different age-groups is less than 4 per cent.

TABLE II.—*Hæmoglobin Level at Different Ages*

Mothers at the Queen's Hospital for Children

Age.	No. of women.	Average hæmoglobin percentage.
21 to 25 years ..	18	85·2
26 ,, 30 ,, ..	43	89·1
31 ,, 35 ,, ..	49	87·4
36 ,, 40 ,, ..	49	87·3
41 ,, 45 ,, ..	24	85·2
46 years upwards	17	86·6

THE DEGREE OF ANÆMIA IN THESE GROUPS OF WOMEN AS COMPARED WITH THAT IN LONDON BABIES

Price-Jones [2] has published hæmoglobin figures for healthy women (Table I.). His estimations were made on women students and hospital nurses. Since our earlier standard has been corrected by his,[3] our figures should be comparable. His average was 98·26 per cent., the highest values obtained being 110 per cent., and the lowest 90 per cent. If, then, we call 90 per cent. the lower limit of normal, then those who reached normal in our groups numbered only 14 per cent. (nursing mothers), 26 per cent. (pregnant women), and 40 per cent. (children's hospital mothers); or 32 per cent. for the three groups combined (Table I.). Again, compared with his average, our groups were lower by 15·5, 14·8, and 11·1 per cent. respectively, and the three groups combined averaged 12·8 per cent., lower.

Is this likely to entail any serious defect in health in these women? By analogy with infants, it would certainly seem so. In two groups of artificially fed infants, one set getting iron therapy and the other acting as controls, the difference in hæmoglobin level

at six months old was about 7 per cent., and by twelve months old had increased to about 13 per cent. (corrected figures, Price-Jones-Haldane standard).[3] With this difference in average hæmoglobin level the morbidity-rate of the control group of babies was approximately double that of the iron group.[1] If we call the normal during the second half year of life 86 per cent., then the controls at six months old were 14 per cent. and at twelve months old 16 per cent. below normal. Hence we may say that in infants an anæmia comparable in grade to that existing among these mothers doubled the morbidity-rate. It therefore seems reasonable to expect that the grade of anæmia existing among these mothers was sufficient to greatly increase their susceptibility to infection.

A COMPARISON OF OUR FIGURES WITH THOSE OBTAINED IN ABERDEEN AND ELSEWHERE

Anæmia among women is evidently common also in America. Brooke-Bland and Goldstein[4] in the United States state that about 50 per cent. of 200 maternity ward patients, whom they examined, were anæmic by their standard—i.e., had less than 3·5 million red cells per c.mm. Galloway [5] has published figures for the hæmoglobin values during pregnancy and afterwards of 222 private patients in Chicago, observed systematically. His estimations were made with a Sahli hæmoglobinometer, so that his values are not strictly comparable with ours. But his findings establish the fact that anæmia was very common among these private patients, for 65 per cent. of them showed at some time under 65 per cent. hæmoglobin.

A comparison of our figures for London mothers with those published from Aberdeen by Davidson and his colleagues[6] is of interest (Table I.). These workers also used the Price-Jones-Haldane hæmoglobinometer. The Aberdeen figures were obtained from the poorest class of the community. The women examined came as escorts for patients to the Aberdeen dispensary, an institution for those not eligible for medical attention under the panel system and unable to pay for medical help. The wage-earner of the family was *usually* unemployed. Hence these women came from a poorer stratum of society than most of our cases. If our London figures are combined, we find that approximately 44 per cent. of women had a hæmoglobin level under 85 per cent., whereas of the Aberdeen women about 47 per cent. were below this level. But what is more striking is that many more of the Aberdeen women were markedly anæmic; of our cases, 3·3 per cent. had less than 70 per cent. hæmoglobin as compared with about 14 per cent. of the Aberdeen cases.

IRON DEFICIENCY AND ACHLORHYDRIA IN MOTHER AND CHILD

Is this anæmia primarily due to iron deficiency? The Aberdeen workers bring forward evidence that it is.[6] They show that the iron in the diet of these families was low and hold that for the women it is often inadequate to meet the demands resulting from menstruation, pregnancy, and lactation. They show also the good response to iron treatment in 20 of the most anæmic cases. If our sample figures are representative of the hæmoglobin values of London working-class mothers (and more information is certainly desirable), we suggest that the majority show some degree of iron deficiency. How far dietetic deficiency in relation to the needs of the period of child-bearing is directly responsible, and what share of the responsibility for anæmia is due to achlorhydria or hypochlorhydria and consequent deficient absorption, still requires to be settled. The Aberdeen workers carried out test-meals on 28 women with hæmoglobin levels under 70 per cent. and 9 women with over 80 per cent. hæmoglobin, and found that 25 of the first group and one of the second group suffered from achlorhydria or hypochlorhydria. A similar incidence of hypochlorhydria and achlorhydria has been demonstrated by Davies and Shelley [7] among anæmic women either pregnant or recently confined. In their series of 26 anæmic women, attending a London hospital, 23 had deficient or absent hydrochloric acid secretion.

Achlorhydria will undoubtedly increase the tendency to anæmia, but may achlorhydria be itself the result of iron deficiency? The very interesting facts reported by Hawksley, Lightwood, and Bailey [8] concerning achlorhydria in babies and young children with iron-deficiency anæmia may have an important bearing on this point. In 12 out of 13 anæmic children examined by them, fractional test-meals revealed achlorhydria, and in 3 cases examined a year or more after treatment the achlorhydria still persisted. Is the achlorhydria due to the anæmia? If so, is nutritional anæmia in infancy a causal factor in the achlorhydria of adult life; and hence does it predispose to the iron-deficiency anæmia common among women? All this is hypothesis and more facts are required before it is possible to arrive at any conclusion.

Again, Strauss [9] has established the fact that iron deficiency in the pregnant woman causes anæmia in her offspring. So the treatment of pregnant women with iron in adequate doses and for a sufficient period would probably do much to lessen the incidence of anæmia among their babies—though we would urge that direct treatment of the baby should certainly not be neglected. It must be remembered that treatment of a nursing mother with iron does not apparently increase the iron available in her milk.

In human nutrition we are apt to take short views. Work with laboratory animals indicates the need of much longer views. In anæmia we see the effects of breaking a dietetic commandment visited on the second generation. Fortunately the remedy is simple.

SUMMARY

The average hæmoglobin level in 368 women of the hospital class—pregnant women or mothers—was 85·5 per cent. as estimated with the Price-Jones-Haldane hæmoglobinometer. As compared with Price-Jones's average figure for healthy women (98·26 per cent.) they were 13·7 per cent. lower, and of the total number less than a third had a hæmoglobin level of 90 per cent. or over; 90 per cent. being the lowest value among Price-Jones's series of healthy women. The degree of anæmia among the women was of a similar order to that existing among babies of six to twelve months old of the same social class. This anæmia of babies is sufficient to double their morbidity-rate. By analogy it is probable that anæmia is an important factor in lowering resistance to infection among women. The inter-relationship of iron deficiency in mother and child is discussed. Routine iron therapy of expectant mothers and of babies is urged.

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THE INFLUENCE OF LARGE DOSES OF POTASSIUM CHLORIDE ON MYASTHENIA GRAVIS

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THE action of eserine, and of its analogue Prostigmin, in the relief of myasthenic symptoms (recently described by Mary Walker [1 2] and confirmed by Pritchard [3] and Laurent [4]) has not yet received a wholly adequate explanation. The suggestion that eserine acts by delaying the destruction of acetylcholine by choline esterase at the motor nerve-ending seems the only workable hypothesis at present. Any substance known to facilitate the production or the utilisation of acetylcholine might therefore be expected to exercise a favourable influence on myasthenia.

Feldberg and Vartiainen,[5] in the course of experiments on the superior cervical ganglion of the cat, found that the addition of potassium chloride to the perfusing solution stimulated the ganglion cells. They also found that a dose of potassium chloride not large enough to do so directly, "raised the excitability of the ganglion cells to preganglionic stimuli, to acetylcholine and to other chemical stimulants." The enhancement of the stimulating effect of acetylcholine by potassium ions was found to be "of the order of 50 per cent." Further, they found that eserine "perfused through the ganglion in weak concentration (e.g., 1 in 10^6) strongly sensitises the ganglion cells to injections of acetylcholine, lowering the threshold dose 8 to 20 times. It has a weak, non-specific sensitising action, lowering the threshold by one-third to one-half for other substances." The latter include potassium ions.

In view of these findings we decided to investigate the possible influence of potassium chloride, in doses large enough to raise the blood potassium significantly, on cases of myasthenia.

In a preliminary investigation, using a modified technique, we determined the level of potassium in the blood plasma of 10 normal subjects and of 6 myasthenics. Our early results suggested that there might be a significant lowering of the plasma potassium in myasthenia. Repeated investigations on the same subjects, however, showed us that this was not so. One of the misleading factors was that the potassium level rises 2 or 3 mg. per 100 c.cm. after a meal; another that older subjects gave higher results, and all our myasthenics were young. Further, the 2 myasthenics who gave the lowest readings of all had such difficulty in swallowing that they were on a diet deficient in meat and vegetables, the two chief sources of potassium.

Method of potassium estimation.—Clear, non-hæmolised serum or plasma is deproteinised by means of tungstic acid (Folin and Wu), and the clear supernatant fluid is treated with nearly saturated sodium cobaltinitrite solution to precipitate the potassium as sodium potassium cobaltinitrite. This precipitate is washed with distilled water and a solution of metaphenylenediamine hydrochloride is added and the precipitate allowed to dissolve in this acid solution in the boiling water bath. A yellow colour is produced varying in intensity with the concentration of nitrite. This colour is compared with the colour produced by a standard potassium solution similarly treated, in a colorimeter.

This method is open to the objection that the colour produced by the metaphenylenediamine hydrochloride does not bear a linear relation to the concentration of nitrite, but this difficulty is easily overcome by using several standards representing different quantities of potassium. The advantages of the method are speed, simplicity, and sensitiveness, a perfectly adequate colour being produced by quantities as low as 0·2 c.cm. of plasma, provided a micro-colorimeter is used.

The error of this method is not more than ± 3 per cent.; results have been verified repeatedly by the permanganate and oxalic acid titration method of Kramer and Tisdall, and all the estimations have been carried out in duplicate.

The 10 normal subjects gave the following results expressed in mg. per 100 c.cm.:—

21·4, 17·5, 22·5, 15·2, 15·2, 15·9, 15·8, 15·8, 17·0, 18·0,

and the six myasthenics the following:—

15·7, 16·4 later 13·8, 15·2 later 15·8, 14·2, 15·8, 15·2.

Although the results in cases of myasthenia have always been rather low, we do not feel inclined to attach much importance to this, since a few of the normals have been equally low.

THERAPEUTIC RESULTS

Three patients with myasthenia were given 2 grammes potassium chloride orally five times a day, each dose being dissolved in half a tumblerful of water. They all claimed some subjective improvement, starting half an hour after each dose and passing off in the course of the next hour. Objectively we observed some slight diminution in ptosis, a little improvement in the range of ocular movement and increases of from 3 to 5 lb. in the power of the grasp. We considered this result encouraging, but by no means convincing. We then decided to try large single doses in the hope of obtaining a more clear-cut improvement. The accompanying photographs illustrate the effect of a dose of 12 g. given in a tumblerful of water. Before treatment the patient has well-marked bilateral ptosis although she is making a maximum effort to open her eyes. Her best effort at showing her teeth only reveals the upper incisors, and there is no trace of a nasolabial fold. The second photograph, taken under similar circumstances 45 minutes after potassium chloride, shows that the ptosis has almost completely disappeared. Retraction of the lips is improved, so that the canines are clearly visible, and the nasolabial fold is evident.

The 5 patients who have received single large doses have all shown results of a similar order. Ptosis, external ocular movements and facial appearance have always been improved to a greater extent than the limbs, although the recording dynamometer has shown constant increase in the power of the grasp of 3–15 lb. according to the case. Generally speaking, the cases with the greatest initial weakness have given the best response. One patient in particular, who was so weak that she could not hold the dynamometer, recorded a grasp of 10–15 lb. on every occasion after a large dose of potassium chloride.

In 2 cases we have taken the opportunity of

(*References continued from previous page*)

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estimating the plasma potassium before and an hour after the ingestion of 12 g. of potassium chloride. A considerable rise took place in each case. The preliminary figures were 14·7 and 15·2 mg. per 100 c.cm., and they increased to 22·6 and 27·4 respectively.

Six patients with myasthenia have taken the salt daily for the past two months. Individual doses have varied from 4 to 6 g. and these have been taken six times a day. The largest total given in one day has been 40 g. This treatment has proved a valuable adjunct to prostigmin. Several of the patients complained that after the effect of prostigmin had worn off, they felt somewhat tired and listless. They have found that a dose of potassium chloride taken before

FIG. 1 FIG. 2

FIG. 1.—Before administration of potassium chloride. The patient is doing her best to open her eyes and clench her teeth.

FIG. 2.—Three-quarters of an hour after 12 g. potassium chloride. Similar efforts give better results.

the action of prostigmin has ended, relieves the feeling of exhaustion and to some extent prolongs the improvement brought about by this drug.

Diuresis, of course, occurs constantly after each dose of the potassium salt. The only unpleasant symptom has been a mild diarrhœa which develops only from time to time in the course of prolonged administration. This can easily be controlled by drachm doses of bismuth carbonate. Nausea has followed the larger doses, but has not troubled the patients when smaller doses were being taken regularly.

The results obtained with the largest doses of potassium chloride tolerated by the patients are still somewhat short of the effect of 0·5 mg. prostigmin given by injection. This was to be expected if the action of potassium is the same as that of eserine—namely, to potentiate acetyl choline. Feldberg and Vartiainen [5] had found that eserine increased the effectiveness of acetylcholine 8 to 20 times, while potassium chloride only increased it by about 50 per cent. Eserine is, therefore, from 16 to 40 times more potent than potassium in this respect. The diuretic action of potassium salts no doubt accounts for the fact that the improvement which follows its administration never lasts more than two hours even after the largest dose.

It was not possible to demonstrate any increase in the potency of prostigmin when potassium was given simultaneously.

SUMMARY

(1) Potassium chloride given in large doses (10–12 g.) by mouth gives a demonstrable improvement in myasthenia. (2) In small repeated doses it is a useful adjuvant to prostigmin. (3) The theoretical considerations which led to these experiments are described and discussed.

We are grateful to Dr. F. M. R. Walshe and Dr. E. A. Blake Pritchard for access to some of their cases.

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CLEFT PALATE

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THE question of how to deal with a cleft palate, especially when it is associated with a hare-lip, is one which arises every now and then in practice, and draws one up with a shock. Hare-lip by itself is a problem only of cosmetics, but cleft palate involves also a possibility of malnutrition and later of defective speech. As regards the former, suffice it to say that hare-lip should be repaired at the earliest convenient moment. The operation is reasonably safe, and the cosmetic result is often permanently successful; moreover, repair of the lip often reduces the defect in the palate, and hence makes subsequent closure simpler and more certain.

Cleft of the palate means that the child will be hard to rear, and will almost certainly suffer from undernourishment with all its perils. The difficulties arise from the fact that sucking the breast or bottle is impossible if there is no adequate opponent for the tongue (as occurs in the major clefts of the palate), and these difficulties can only be overcome in one of two ways—namely, by the provision of a species of denture or plate for the infant, or by spoon, bottle, or fountain-pen-filler feeding. Of the former method I have no experience; the success of the latter can, I believe, be sustained only by careful and self-sacrificing perseverance on the part of the mother or nurse. Thus the child with a cleft palate has to surmount many hurdles in the first year or two of life, and it is not surprising that many succumb through inattention or indifference.

Sooner or later the question of closure of the palate has to be faced and, unfortunately, its consideration is too often postponed until the parents have observed the defective speech. The age at which this is evident seems to vary a good deal, and the lateness or earliness of speech is one of the factors which affect the results obtainable by operation. Striking an average however, it may be said that defects are noticeable at, or before, the third year of life. In another paper [1] I have endeavoured to show how these defects arise, and how they are continued until such time as habits, difficult to eradicate, are formed. Clearly it is imperative to operate before these habits begin, and that means at or before the age of about two years.

As I have said already, many of these cases have an uphill fight and hang on to life with but slender threads. It is therefore my practice before operating on such young children to ask the guidance of my colleagues at the Newcastle Babies' Hospital, since by the mere surgeon many unsuspected cases of gross infantile disease are easily overlooked. Apart from

the skilled assistance of pædiatricians no special pre-operative precautions are taken.

The Operation

Having decided that operation should be undertaken before speech has become an established habit, the next problem is the type of operation to be done, and at this point it should be recognised that the object in operating is to produce a partition between the oral and nasal cavities and to restore the palate to such a form and condition that it is able to reach the posterior pharyngeal wall and thus close off its cavity. Without this closure normal speech is virtually impossible, and a failure in this respect is responsible for a very large proportion of the cases in which bad speech remains after the classical operations. The fault in these operations lies in non-recognition of the fact that two halves of a cleft palate never together equal one whole palate, and that, owing to changes in the architecture of the whole skull, the nasopharynx is so capacious as to make it impossible for the repaired palate to meet the pharyngeal wall and thus obliterate the cavity. To be successful, then, an operation must aim either at reducing the size of the nasopharynx, or at increasing the mobility of the soft tissue in the palate. With the object of reducing the size of the nasopharynx, I devised the operation of pharyngoplasty, and, after some considerable experience, I am prepared to urge its adoption in all cases of cleft palate.

Pharyngoplasty aims at narrowing the capacious nasopharynx and at producing a ridge on the posterior pharyngeal wall, in imitation of the ridge of Passavant which normally arises in this situation during speech; against this ridge the soft palate can make contact and so close the nasopharynx. The operation is performed by making a transverse incision through the posterior pharyngeal wall at about the level of the anterior arch of the atlas and then suturing this in a vertical direction, thus narrowing the pharynx from side to side and, at the same time, producing a prominent ridge. The operation is performed using endotracheal anæsthesia, and can be carried out with precision at an early age. Observation of the results of pharyngoplasty after some years demonstrates the continued narrowing of the pharynx and is, of course, reflected in the speech results.

It is manifestly impossible to increase the amount of soft tissue in the palate, but there are many ways in which the maximum degree of mobility of the available tissue can be attained, and one of these—namely, division of the hamular processes—is of paramount importance. Division of the hamular processes sets free the tendons of the tensor muscles of the palate, these being the main obstacle to free mobility. Its efficacy can be demonstrated either on the living or the dead body, or on theoretical grounds after comparison of the normal skull with that of the cleft palate.[2]

Repair of the palate is carried out at the same sitting as the pharyngoplasty, and since each case must be judged on its merits little need be said of the exact procedure adopted. Suffice it to say that the hamular processes are always divided, and that an attempt is always made to reconstruct the nasal mucosa as advised by Veau.[3] The various flaps and incisions recommended from the time of Langenbeck onwards are used to fit the particular case.

After-treatment should not be elaborate, and during the healing process the less done to the palate the better. Feeding for the first ten days should consist of sterilised liquids, each meal being followed by a drink of sterile water. After this time, return to normal feeding should be gradual. Local treatment to the suture line is not necessary in infants.

The Results

Results of the combined pharyngoplasty and repair of the palate have given the greatest satisfaction, and my experience has been that if a child is operated on before defective speech habits have become firmly established, and if the palatal mechanism is restored (as is done in the large majority of cases), it will grow up without any of the stigmata of cleft palate speech. Such a claim may almost be regarded as fantastic in the light of experiences with classical types of operation, but nevertheless the statement is true. Moreover, this result is attained without any special training except such as can be given by the mother.

The *speech history* after operation varies somewhat. As emphasised above, most children submitted to pharyngoplasty and repair of the palate develop speech which is in every respect normal. Others pass through a phase when they develop some of the characteristic defects of cleft palate speech, but in the course of a few months, or a year or two, they lose these defects completely, so that it is impossible to say that they have ever suffered from this abnormality.

Secondary operation.—It must be a general experience that after the classical operations the majority of patients develop cleft palate speech and retain it for the rest of their lives. Such cases can often be restored to normal habits of speech by pharyngoplasty, division of the hamular processes, and some of the various methods devised for such secondary operations as I hope to publish in a further paper devoted exclusively to surgical technique. These cases nearly always require subsequent speech training, since they have acquired habits which have grown harder to overcome the longer they have existed.

Recognition of Functional Abnormality.—The question then arises as to when one has waited long enough before submitting a supposedly successful case of repair, with bad speech, to further operation. Admittedly the decision is difficult; it is going to depend on the ear, and on certain physical tests. The reference to the ear concerns the practitioner and not the patient, because nothing has retarded the progress of cleft palate surgery more than the fact that auditory acuity is low in most human beings. Practitioners vary widely in their ability to detect even quite gross defects in speech; but there are two characteristic faults which ought always to be recognisable—namely, the use of the glottic stop to replace consonants, and the formation of the pharyngeal or nasal "s." In the physical tests auditory judgment can be replaced by observation of facts. A child with cleft palate of the major degree cannot close the nasopharynx, and consequently cannot perform many of the normal evolutions such as clearing away pharyngeal mucus; in other words, he cannot snort. He cannot inflate balloons or blow soap bubbles, except with extraordinary effort in which nasal escape predominates. Hence, if operation is to be regarded as successful, the functions of snorting, balloon-inflation, and soap-bubble blowing must be carried out with facility and without real effort. In these respects, then, one has simple tests of the efficiency of one's surgical procedures, and if, despite careful speech training, any defect persists over a reasonable period after operation—say, a year or more—then secondary operation should certainly be considered. Where it can be proved that the patient can close the nasopharynx, as shown by the physical tests, no further

surgical interference is required, and training should be continued.

The necessity for *speech training* is in my opinion an admission of surgical and physiological failure, but there is no doubt that such training plays a very important part in the after-treatment of the cases of cleft palate in which surgical failure has occurred, or in which the operation has been delayed too long. Speech training as carried out by Miss Freda Parsons of Birmingham is very impressive, since undoubtedly, as Miss Parsons claims, it is associated with pharyngeal and palatal muscular development. The attainment of a good result by speech training, however, is a long and laborious process which may extend over years without the attainment of perfection. Further, many of those trained are capable of excellent speech in the presence of their teacher, but make no attempt to use their training in the ordinary affairs of life. Again, trained speech very often lacks the carelessness and slovenliness of ordinary conversational English. This is no veiled and underhand shot at those who are doing magnificent and painstaking work; it is merely a plea that the unfortunate sufferers from cleft palate should be submitted to early and physiological operation in order that they may be allowed to develop speech in a natural fashion.

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THE USE OF PURIFIED CASEIN IN SALT-FREE DIETS

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Synthetic Milk

MILK is generally forbidden when a patient is prescribed a strictly salt-free diet. The usual substitute is cream, which is quite satisfactory for many purposes, but it has obvious disadvantages for young children. Further, if the case to be treated is one of nephrosis with normal powers of nitrogen excretion, a reduction of the protein intake by substituting cream for milk may not be advisable.

A synthetic milk containing almost no sodium chloride has now been devised and used both therapeutically and experimentally. It is relatively easy to prepare and is a very fair substitute for natural milk. It is made from water, lactose, cream (United Dairies Ltd.), "ashless" casein (Glaxo Laboratories), and a salt mixture containing calcium, magnesium, potassium, iron, and phosphorus. Lactalbumen has not been added owing to the difficulty of obtaining a salt-free preparation of this protein (*vide infra*). The composition may, of course, be altered to suit individual requirements, and two varieties are here described. The first, which was made up as nearly as possible to a cow's milk formula, was quite palatable, and was used successfully in treating a child of 15 months with massive œdema and a normal blood-urea. This milk had, however, a slightly gritty taste, presumably owing to the rather high content of insoluble calcium salts. A second milk was therefore made which contained the amounts of protein, fat, and carbohydrate found in cow's milk, but in which the salt content was considerably reduced, so that the amounts of calcium, phosphorus, magnesium, and iron approximated very closely to the amounts of those elements found in human milk. This second milk is decidedly smoother in taste, and is recommended where a high mineral content is not required. Both milks prepared according to the directions below are neutral to litmus, and they can be kept for several days in a cool place.

PREPARATION OF MILKS

The following solutions are used:—

Stock Solution A.—Normal KOH (5·6 per cent.).

Stock Solution B. (Cow's milk formula.)—KH_2PO_4, 20·4 g., calcium lactate, 33·7 g., $MgSO_4 7H_2O$, 6·5 g., and $FeSO_4 7H_2O$, 0·10 g. (made up to 500 c.cm.).

Stock Solution C. (Milk with low mineral content.)—KH_2PO_4, 3·05 g., calcium lactate, 6·2 g., $MgSO_4 7H_2O$, 2·0 g., and $FeSO_4 7H_2O$, 0·10 g. (made up to 500 c.cm.).

B and C are not true solutions since some of the calcium salts are present in suspension.

Half a litre (18 oz.) of synthetic cow's milk may be prepared as follows:—

20 g. of ashless casein are suspended in 420 c.cm. of water, and 24 c.cm. of normal KOH (Solution A) are added. The mixture is heated to boiling with constant stirring. Then 50 c.cm. of stock solution B are added, and the milk is again boiled. It is allowed to cool and 25 g. of lactose and 2 oz. (60 g.) of cream are added.

The second variety of milk, with a lower mineral content, is prepared as follows:—

20 g. of ashless casein are boiled with 430 c.cm. of water and 13 c.cm. of normal KOH (solution A). Then 50 c.cm. of stock salt solution C are added and the mixture is again boiled. After cooling, 25 g. of lactose and 2 oz. of cream are added as before.

Precautions.—It is necessary to adhere closely to the prescribed conditions to obtain a smooth and homogeneous preparation, and the cream should not be added until the milk is nearly cold. Lactose is easily charred by hot alkali, and it is important that it should not be added until the milk has been neutralised by the stock salt solution. All preparations of casein may not have exactly the same alkali value. It may be necessary, therefore, to make small adjustments in the amount of KOH required to render the final product exactly neutral.

Since aluminium is so readily attacked by alkali, a saucepan of this material should not be used in the preparation of the milk.

TABLE I.—*Mineral Composition of Natural and Synthetic Milks* (mg. per 100 c.cm.)

—	Cow's milk, natural.*	Cow's milk, synthetic NaCl-free.	Human milk, natural.*	NaCl-free synthetic milk. Low mineral content.
Calcium ..	120	120	22·6	22·6
Phosphorus	94	94	14·0	14·0
Sodium ..	43	4	43	4
Chlorine ..	93	6	87	6
Potassium.	156	304	74	118
Magnesium	13·5	13·0	4·1	4·1
Iron	0·11	0·4	0·096	0·4

* Analysis from McCance, Sheldon, and Widdowson.[1]

COMPOSITION AND USES

Table I. shows the relative mineral compositions of cow's milk, human milk, and the two varieties of synthetic milk. It will be observed that the two synthetic milks contain more potassium than do the corresponding natural milks, but physiologically there is no objection to this. Some of the extra potassium replaces the sodium found in the natural milk, and

the remainder must be added to obtain a neutral solution if the calcium is added as the soluble lactate. The traces of sodium and chlorine are derived from the added cream.

The synthetic milks may be used for most purposes for which cow's milk is generally employed. They may be used for infant feeding, and for this purpose they may be sweetened with cane sugar. More cream may of course be added if desired. No claim is made that the milk is a "perfect" food for a growing baby. Owing to the omission of lactalbumen it may, for example, be deficient in cystine. A supplement of cystine could be added if a salt-free milk was to be the sole article of diet for a considerable time. For most purposes however this will be quite unnecessary, since casein is admittedly a protein of high biological value. Similarly, small amounts of copper could be added if desired.

Further it is to be noted that these synthetic milks contain no vitamin C. The added cream will supply some vitamins A and D but probably not enough for a growing child.

For older patients the milk may be used in tea, and in coffee and cocoa it is quite indistinguishable from ordinary milk. It has been used for cooking with considerable success, and in rice pudding, blancmange, milk jelly, and powder-custard, the slight flavour of the casein cannot be detected.

COST

"Ashless" casein, which is a "special acid-washed first grade acid casein," has been used throughout and costs 4*s.* per kg. Half a litre (18 oz.) of milk prepared as previously described costs about 6*d.* (casein 1*d.*, lactose 1*d.*, cream 4*d.*) A cheaper preparation of NaCl-free casein, "1st quality casein," costing 2*s.* 9*d.* per kg. has been investigated. Milk prepared with this casein is possibly not quite so palatable, and its price is only reduced by ½*d.* per 500 c.cm.

Salt-free Casein Bread

Salt-free diets with a high or even normal protein content are difficult to construct since the foods rich in protein—meat, fish, cheese, eggs, and milk—are those which contain a relatively high percentage of sodium chloride. A salt-free bread containing ashless casein has proved to be extremely useful in these cases, and it is almost indistinguishable from home-made salt-free bread prepared entirely from flour. This bread is made from 640 g. (22½ oz.) of flour, 156 g. (5½ oz.) of ashless casein, 15 g. (½ oz.) of yeast, and 425 c.cm. (15 oz.) of water, and is mixed and baked in the ordinary way. The relative compositions of ordinary bread and casein bread are shown in Table II. The cheaper casein would reduce the cost of 1 lb. of bread by about 1*d.*

TABLE II

	Ordinary bread (Plimmer [3]) g. per cent.	Casein bread g. per cent.
Protein	7·0	19·7
Carbohydrate ..	47·4	42·5

Summary

(1) A method is described for the preparation of two varieties of synthetic milk containing a negligible amount of sodium chloride. One milk has approximately the same composition as cow's milk, while the other has a lower mineral content. (2) The preparation of a salt-free bread containing 19·7 per cent. of protein is also described.

We wish to thank Miss B. Swayne for her assistance with the cooking. One of us (E. M. W.) is indebted to the Medical Research Council for a part-time grant.

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A NOTE ON THE VALUE OF THE DRINKER RESPIRATOR IN DIPHTHERIA, EMPYEMA, AND PULMONARY COLLAPSE

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THE Drinker respirator [1] has been employed in America since 1929 for paralysis of respiration in poliomyelitis, alcoholic coma, drug poisoning, drowning, and asphyxia neonatorum. Gordon, Young, and Top [2] in 1933 reported two cases of post-diphtheritic respiratory paralysis treated in the respirator. They were impressed by the possibilities of use of the apparatus for this condition. Since February, 1934, the first respirator purchased by the London County Council for use in its infectious hospitals has been stationed at the North-Eastern Hospital. This paper is a preliminary note on the use to which the apparatus has been put; a more detailed report is to be published later. Eight cases of diphtheria and two of empyema thoracis were treated.

IN DIPHTHERIA

The paralytic stage of diphtheria occurs roughly from the third to the sixth weeks. The manifestations suggest lesions of the nervous system. Our view is that these are central (bulbar), not peripheral. This is of importance because Wilson,[3] in discussing the types of respiratory failure in poliomyelitis, expressed the view that those of bulbar origin were the least amenable to treatment in the respirator. Paralyses, when they occur, tend to affect structures in a more or less regular sequence: the palate, the eyes, the heart, the pharynx, and the diaphragm being a common order. The last two often occur together. Death in this stage may be due to concomitant circulatory failure, but is usually the result of respiratory failure or broncho-pneumonia. Involvement of the lungs is of considerable importance in deciding whether a case is suitable for the respirator. It depends either directly upon the paralysis of respiration or is secondary to accumulated mucus in a paralysed pharynx. The function of the Drinker respirator is to replace or augment the failing respiratory musculature.

The eight cases of diphtheria were all severe, with extensive oro-pharyngeal membrane and moderate or severe toxæmia. All except two were given intravenous as well as intramuscular antitoxin. The doses varied from 64,000 to 160,000 units. In all except two there was clinical and/or electrocardiographic evidence of severe cardiac damage. Two cases (which recovered) had complete heart-block. The time of onset of paralytic phenomena varied from 17 to 40 days, but the diaphragmatic paralyses were strikingly consistent in their time of

appearance: forty-second to fiftieth day. Of the eight cases, five recovered and three died. The experience culled from the series may be summarised thus:—

1. Cases must be put in the respirator early—as soon as diaphragmatic paralysis is suspected; otherwise there is considerable danger of broncho-pneumonia developing.

2. When exudative changes are present in the lungs the respirator is of little or no value.

3. The pharyngeal paralysis which so frequently accompanies the diaphragmatic must be treated thoroughly. Owing to the fact that the respirator employed was not tiltable, the valuable procedure of postural drainage could not be employed. Mechanical aspiration and manual removal of mucus are, however, adequate if carried out thoroughly. Nasal feeding is usually necessary and should be done without stopping the machine.

4. The patient should be retained in the respirator continuously. Among the recoveries, the shortest period necessary was 4 days and the longest 15 days. This provides valuable, and hitherto unknown, information concerning the natural duration of diaphragmatic paralysis in diphtheria. When there are signs that movement of the diaphragm is returning, the patient can be tried without the apparatus for short periods.

5. If the respiratory rate of the patient is grossly abnormal, no attempt should be made to synchronise the respirator with it; rather the apparatus should be adjusted to a rhythm of about 20 per minute in the expectation that this will be imposed upon the patient.

6. Positive pressures are without advantage and sometimes produce discomfort. Negative pressures need not be great. A variation of from 0 to −16 or −18 cm. of water is usually the maximum required. Hyperventilation, which has been practised in America to produce periods of apnœa whilst the patients are receiving attention, was not attempted in our series.

7. A patient who is going to improve responds in a definite manner: (*a*) His respiratory rate adjusts itself almost immediately to that of the machine. (*b*) Cyanosis and dyspnœa rapidly disappear. (*c*) Restlessness, due largely to violent respiratory efforts and the consequent embarrassment of a heart already labouring under difficulties, disappears. The rate of the pulse falls, its quality improves, and not infrequently the patient falls into a restful slumber. This sedative effect can be most striking. Cases which fail to respond in this way are unlikely to derive benefit from the respirator. Such cases are usually those in whom broncho-pneumonia has appeared.

8. The equable and slightly raised temperature which was maintained inside the respirator by the heating lamp appeared to have a beneficial effect upon the circulatory collapse which occurs in this stage of the disease.

Of the five cases which recovered, four would certainly have died without the assistance of the respirator. Of the three deaths, two had evidence of commencing broncho-pneumonia before entering the respirator. In both the respiratory rate of the patient failed to adjust itself to that of the machine; in consequence no relief was provided. One was in for four hours only, the other for five hours. In the third case the respiratory distress was relieved, but death appeared to be due to circulatory failure of bulbar origin.

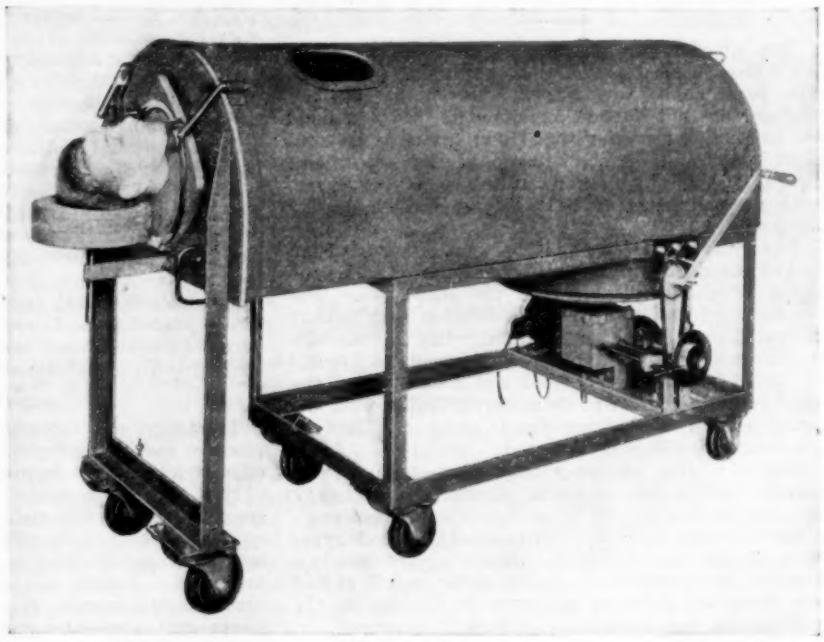
IN EMPYEMA

We have been unable to find any reference in the literature to the use of the Drinker respirator in empyema. The two cases here described suggest a new and valuable field for the use of the apparatus.

The first case was that of a child of 1¾ years, admitted for measles and broncho-pneumonia. A localised empyema in the right middle and outer pulmonary zone was treated by aspiration and later by rib resection. Progress was extremely slow, and 54 days after the operation the wound was still discharging. As the child was too young to be taught to inflate its lungs by respiration against resistance, it occurred to one of us (M. M.) that the respirator might be usefully employed to expand the lung by negative external pressure. The healthy side of the chest was strapped and the patient put in the respirator for one hour daily at pressures of 0 to −18 cm. of water. Four such treatments sufficed to expand the lung and the wound healed six days later. A later X ray showed only a narrow band of opacity to indicate the site of the former cavity.

The success which attended this experiment was so immediate and so striking that it was decided to try another case which was proving troublesome. This was not a simple case such as the one just described. Nothing definite was hoped for and, as it happened, a successful issue was not obtained, but definite improvement occurred.

This case, a female of 4 years, had previously suffered from asthma and several attacks of pneumonia. She was admitted for whooping-cough and pneumonia. Six weeks after admission she developed an interlobar



To illustrate the type of respirator used. The enamelled steel chamber encloses the whole of the patient except the head; a sorbo-rubber collar forms an air-tight junction at the neck. The variations in pressure are produced by the electrically-driven bellows, which can be seen at the foot of the apparatus above the motor.

(From a block lent by the manufacturers, Messrs. Siebe, Gorman and Co., Ltd., London.)

empyema which ruptured into a bronchus and infected the general pleural cavity. Despite a rib resection, progress was negligible; the wound continued to discharge and several X rays revealed an empty cavity in the mid-pulmonary field with collapse of the lung base. As all efforts at inflation failed to expand the lung, she was treated in the respirator on the same lines as Case 1. The discharge diminished at once and her general condition improved. An X ray showed that the basal collapse had disappeared and treatment was discontinued. The discharge immediately increased in amount, but diminished when treatment in the respirator was restarted. After seven days' treatment the discharge only amounted to an occasional head of pus, and an X ray showed evidence of permanent fibrotic changes in the lung. At the request of her parents she was discharged and allowed to attend an out-patient department.

We are of the opinion that this case derived definite benefit from the respirator. The beneficial effect was due to the fairly rapid disappearance of the pulmonary collapse. All the other abnormalities were unaffected by the apparatus.

We desire to acknowledge our indebtedness to Dr. W. Gunn, for placing his American experience of the apparatus at our disposal; and to Dr. E. H. R. Harries, medical superintendent of the hospital, for his valuable coöperation and encouragement, and for his permission to publish these cases.

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ADOLESCENT COXA VARA*

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THE slipping of the upper epiphysis of the femur is a well-recognised condition occurring in adolescents. The term coxa vara was introduced in 1894 by Hofmeister[1] and Kocher, but Sprengel,[2] in 1898, made the original observation that slight trauma was sufficient in certain individuals to produce this separation. In 1913 Elmslie[3] reviewed the subject of coxa vara, with special reference to the type seen in young adolescents.

The separation occurs only between the ages of ten and nineteen, the upper limit being determined by the union of the epiphyses with the diaphyses. The reason why it is not seen much before ten may be that the cartilages of the great trochanter and the head are continuous before this age, as observed by Irwin.[4] In 1915 Walmsley[5] pointed out that at ten the epiphyseal line comes to lie more vertically, with the result that the shearing force along the line of the growth cartilage is increased

The causation is not certain, but undoubtedly several factors are at work. Trauma is certainly one, but it is often slight, and often indirect (e.g., a twist of the leg); quite frequently no history of trauma can be recorded. Kocher considered a localised osteomalacia to be the cause, and Wardle[6] has described areas of apparent rarefaction in the metaphyses.

A large proportion of the patients show Fröhlich's syndrome, but it is possible that the increased weight is purely traumatic in its effect.

* Based on a paper read to the British Orthopædic Association on Nov. 3rd, 1934.

The seven cases considered in this paper are a personal series, and for that reason the numbers are unfortunately small. Two points may, however, be noted:—

(1) Whereas the boys are often of normal physique (with a history of trauma), the girls are apt to be obese (4 out of 5 in this series). They may weigh as much as 2 st. above the average for their age.

(2) A definite history of trauma was obtained in only 2 cases out of 7. In one of these there were premonitory symptoms—a common feature of the condition.

SYMPTOMS AND DIAGNOSIS

Adolescent coxa vara forms about 1 per cent. of orthopædic cases. It is notorious, however, that these cases are rarely diagnosed before admission to hospital, although in the early stages, before deformity has occurred, there should be no difficulty in their recognition.

Pain is usually the first symptom and may precede any others by weeks; it does not, as a rule, follow trauma. The pain is gradual in onset, is often described as rheumatic, and may be referred to the hip or knee. After a short time it becomes sufficiently severe to warrant medical attention and X ray examination. In the preliminary stage of this condition—as so often also in tuberculosis of the hip—radiography may be negative. There may, however, be slight areas of rarefaction visible on the diaphyseal side of the epiphyseal cartilage, and sometimes the profile of the upper border of the neck and head of the femur is convex upwards—that is, slipping has commenced.

As soon as pain is at all severe a limp will be noticed. Any child between the ages of 10 and 19 who complains of these symptoms should be radiographed and kept in bed for a week. All transient conditions, such as mild rheumatism, should clear up by this time, whereas more serious lesions, such as coxa vara, will show a return of symptoms if the child is allowed to bear weight again after this short interval. This condition should be suspected if the child is growing very fast or shows evidence of an endocrine disorder, such as marked adiposity or Fröhlich's syndrome.

Six weeks' rest, with slight extension, is the correct treatment at this stage. The condition is sometimes bilateral though usually not simultaneous. It does not affect the general health. After some weeks, and often as the result of moderate trauma, displacement occurs. If the onset is sudden there is extreme pain and inability to walk. In any case, an obvious limp will be noticed, partly due to shortening and partly to limitation of hip movement. Eversion of the foot is always present, and may be very conspicuous. The hip appears flattened, and some fullness over the front of the joint may be detected. Movements are limited except extension and adduction; abduction is very limited and internal rotation not allowed.

TREATMENT

Treatment of adolescent coxa vara by simple traction has been adopted by many surgeons, yet its efficacy and results do not seem to be widely known.

Until quite recently the orthodox treatment consisted in forcible reduction of the deformity by wide abduction of the affected hip under anæsthesia, and prolonged fixation in the corrected position by means of a double plaster spica. Most people will agree that the results were not very satisfactory; stiff joints and the subsequent development of severe arthritic changes were common, while the original deformity often remained unreduced. Subtrochanteric osteotomy of the deformed femur often gave good functional results, and this is still the method of choice where the deformity cannot be reduced. I propose to

deal here with those cases in which deformity has not yet occurred, or is reducible by simple skeletal traction.

The X ray photograph of a typical case of adolescent coxa vara (Figs. 1–3) shows that the head has remained in its normal position in the acetabulum, while the neck of the femur (1) has risen an inch or so; (2) is adducted; and (3) is externally rotated as shown by the lesser trochanter being in profile.

The raw surface of the neck looks very much upwards and forwards, and only to a slight extent inwards. Naturally, Shenton's line is lost.

As the position of the head cannot be controlled reduction must be effected by changing the position of the neck. This was the principle of forcible reduction by abduction and internal rotation, but in that method the fulcrum about which the femur rotated was of some of Wardle's[6] cases, and it is suspicious that he gives the standard of good result as "not more than ½ inch of real shortening." In the majority of his radiograms, however, it will be seen that during traction the femur is abducted. Perkins,[7] in his description of treatment, leaves the sound leg free so that traction on the affected side only causes abduction by the tilting of the pelvis.

In order to get apposition of the two fragments their raw surfaces must be brought into parallel planes, and this can only be done by abduction at the hip-joint; this is most accurately achieved by abducting the femur, during extension, to the requisite angle. When this manœuvre is employed, the fulcrum is not at the contiguous raw surfaces, but at the attachment of the pubo-femoral ligament—as has been explained by R. Whitman in describing his method of reducing

FIG. 1.—Typical adolescent coxa vara of the left hip in girl aged 11, showing complete separation of the epiphysis. Note the external rotation of the shaft of the femur.

FIG. 2.—Radiogram of the same hip six months after reduction, showing complete reduction. Note upper line of neck and head, and the normal rotation of the shaft of the femur.

FIG. 3.—Normal hip of the same patient, the radiogram being reversed for comparison.

the point at which the lower edge of the neck impinged upon the head, thereby causing severe trauma to the latter, and possibly tearing of the lower part of the capsule as well. It is this fact which produced the bad results of this form of treatment. In 1929 Irwin[4] says:—

"With two exceptions, out of a dozen cases which I have examined personally, the patients have suffered from pain, stiffness almost to the extent of complete ankylosis in some, and gross disability has always been present. One of the mobile cases was shown to me by H. P. Malcolm. It was unilateral, and was treated by extension for six months almost as one would treat a case of tuberculosis of the hip. A year later movements were still excellent."

Results of forcible abduction may have caused a swing of the pendulum in the opposite direction, and several surgeons who have adopted the recent method of skeletal traction have stated that the limb should not be abducted. If extension without abduction is applied, either the shortening only will be overcome, or the head will be forced back into relation with the neck by being caught between the lower lip of the acetabulum and the lower border of the neck. This would account for the slightly incomplete reduction shown in some of these cases, the end-result showing the upper border of the neck and head to be convex upwards. This appears to be the condition in the photographs high cervical fractures of the femur. In addition, the tension of this ligament causes the femur to rotate internally, thus removing the third displacement—a fact which has often been observed without exciting adequate comment.

A SERIES OF CASES

The course of adolescent coxa vara may, as we have seen, be divided into three stages:—

1. Premonitory or pre-slipping.
2. Deformity present but reducible.
3. Deformity present and irreducible.

In the present series of 7 patients with 9 affected hips (2 were bilateral), 2 were boys and 5 girls; the age ranged between ten and sixteen years; none were examined in the first stage, though 3 called for medical advice then. Seven were in the second stage: 6 were treated by traction and reduction was effected; 1 was treated elsewhere by forcible abduction and plaster with a poor result. Two were in the third stage.

In all cases where the history of pain was six weeks or less, reduction was effected (see Table). The duration of the third-stage cases was 3 months and 9 months. Irwin[4] says that stabilisation appears to occur from six weeks to three months after displacement.

Table showing Results in the Treatment of Adolescent Coxa Vara

No.	Hip.	Age.	Sex obesity.	Length of history.	Weight extension 7 weeks.	Result.
1	L.	10	F. ++	6 weeks.	10 lb.	Complete reduction.
2	L.	16	M. —	9 months.	25 lb.	No reduction.
3	R.	13	F. +	?	?	Complete reduction.
	L.	,,	,,	6 weeks.	20 lb.	
4	L.	12	F. +	Acute onset.	None.	Very poor reduction.
	R.	13	,,	1 week.	15 lb.	Complete reduction.
5	L.	11	F. +	3 weeks acute.	15 lb.	,,
6	R.	14	M. —	?	20 lb.	,,
7	L.	11	F. +	3 months.	None.	No reduction.

The skeletal traction was obtained in the earlier cases with a Steinmann's pin, and later with Kirschner wire through the lower end of the femur, the limbs being supported in Thomas splints, each in about 30° abduction. Traction on the affected side varied from 10 to 20 lb., with counter-extension by raising the foot of the bed. The deformity having been corrected, the weight was gradually reduced after four weeks but traction was continued for seven weeks, the process being controlled by radiography. After the limb had lain loose to allow active movement, a weight-bearing calliper was worn for six months and gradually left off; during this period reduction of obesity was attempted where necessary.

Clinical investigations were carried out in some cases, but in these no abnormality was found in the blood, urea, calcium, or phosphorus estimations. The plasma phosphates figure appears to have been low, but this may have been erroneous.

In all cases where complete reduction was obtained full range of movement was eventually present, with the exception of internal rotation which was slightly limited in two cases. Restoration of full range of movement to the knee was often more difficult than to the hip.

In one case an X ray photograph taken two years after complete reduction shows a slight relapse, which had apparently occurred without symptoms. Radiograms taken six months after reduction had been normal.

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CLINICAL AND LABORATORY NOTES

FRACTURES OF THE CALCANEUS

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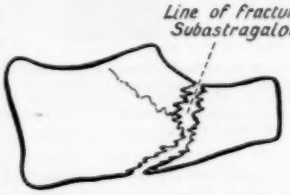
Since 1931, in fractures of the calcaneus involving the subastragaloid joint, I have concentrated on early movement of this joint; for only by keeping it free from adhesions can a painless foot be achieved. Normally, in walking, the shoe adapts itself to inequalities of the ground by movements at the subastragaloid and midtarsal joints. If the subastragaloid joint is limited by adhesions any slight inequality of the ground produces pain.

The fracture is caused by a fall from a height on to the heels. The body-weight, transmitted by the astragalus, fractures the calcaneus. The deformity which develops in a very severe fracture has been described by Böhler: the posterior fragment is pulled upwards by the tendo Achillis, flattening the posterior pillar of the longitudinal arch of the foot; the posterior fragment is also drawn forward by the short muscles of the sole of the foot, and the os calcis becomes broadened. Such displacements, if present, must be corrected by the special methods of Böhler, but as a rule they do not occur.

The treatment I adopt is as follows. The foot is encased in plaster applied over stockinette, the plaster being continued up the leg to just below the knee. A Sorbo rubber heel is fitted to the plaster and the patient is encouraged to walk about and to exercise his toes. At the end of three weeks the plaster is split down each side and the foot is taken out three times a week for movements of the subastragaloid joint. With the patient lying on a couch the astragalus is gripped by one hand of the masseur. The patient is encouraged to relax the muscles of his leg, and the masseur with his other hand inverts and everts the calcaneus. Movement at the subastragaloid is difficult to distinguish at first; for when it is absent the soft tissues over the calcaneus move and give a feeling of movement at the subastragaloid joint, which may deceive the inexperienced masseur. When the movement is really present, however, there is no doubt about it. During the period of split plaster no weight is taken on the plaster, and the patient moves with crutches. At the end of 8 to 12 weeks, depending on the size of the crack, normal weight-bearing is permitted.



The following notes summarise four cases treated by this method:—

Case 1.—On Oct. 31st, 1931, the patient fell 20 feet on to his heels, sustaining a bilateral fracture of the calcaneus. End result: moderate movement of the subastragaloid joint. Can walk only four miles, after which foot gets painful.

Case 2.—On August 10th, 1932, patient fell 10 feet off a ladder and fractured his calcaneus. Treatment was given and patient was walking eight weeks later. Two weeks later the subastragaloid movements were still poor and walking painful, and the foot was manipulated under an anæsthetic. Böhler's "redresseur" was used as a wrench to grip and move the calcaneus. A report on Nov. 29th, 1934, states that the foot is practically normal; patient can walk any distance, and gets slight pain only occasionally in changeable weather. Not affected by uneven ground.

Case 3.—On Nov. 19th, 1932, patient fell on to heels. Discharged twelve weeks later. Is now able to walk six miles without pain.

Case 4.—Fell 5 feet off ladder on Oct. 10th, 1934. Ten weeks later no subastragaloid movements present and walking extremely painful. Masseur changed. Two

weeks later subastragaloid movements obtained. Three weeks later able to walk two miles free from pain.

Fractures of the calcaneus are comparatively rare, forming only 0·25 per cent. of the fractures I see in my clinic. Malpas [1] in 1927 reported that the end-result of 25 cases he had examined depended on the degree of movement of the subastragaloid joint: those with limited movement from fibrous adhesions were painful. In my small series I have aimed at preserving a full range of movement in this joint, and the result has been that all the patients have returned to the work in which they were previously engaged.

[1] Brit. Med. Jour., 1927, i.

A CASE OF "BOTRYOMYCOSIS"

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On March 25th, 1934, a male Persian, aged 18, of the coolie class, was admitted to the Isolation Hospital, Masjid-i-Suleiman, for observation. As the accompanying photograph shows, he had an extensive verrucose sessile nævoid tumour on the inner and anterior aspect of the left shin, and on the dorsum of the left foot. The tumour was not hairy and was darker than the unaffected skin of the leg; the hard verrucose granulations were situated on the summit of comparatively soft dome-like swellings which easily subsided on pressure with the fingers, but resumed their shape immediately the testing finger was withdrawn. The patient stated that the tumour had existed for "many years."

On admission the boy was thin and obviously under-nourished, but otherwise normal. He had no pain but the tumour seemed tender, although he allowed the observer to incise the swelling on the foot and to remove sufficient for histological examination without much fuss. The incision bled profusely, and it was then discovered that the patient's apprehension had been on account of feared loss of blood, he having had experience of troublesome bleeding after slight injuries to his tumour.

Investigation.—(1) On applying Gram's stain the blood obtained from the tumour showed many pus cells, with intracellular and extracellular Gram-positive cocci in great profusion; there were also some diphtheroids. No acid-fast bacilli could be found. (2) Culture on glucose broth showed many streptococci of *viridans* type. On blood-agar many staphylococci and diphtheroids were grown; the latter, injected into a guinea-pig, were not virulent. A mixed staphylococcal and streptococcal vaccine was prepared. (3) A blood Wassermann test gave a positive reaction (nomenclature of League of Nations Health Committee). (4) The report on a section was as follows: "The basis structure seems to be a cavernous hæmangioma, with a very loose fibrous tissue framework. There is slight chronic inflammation in the deeper parts of the section; in the superficial layers there is well-marked chronic and acute inflammation, amounting to sepsis, and with hæmorrhagic effusions into tissue spaces. The inflammatory reaction is not characterised by any cellular or structural changes that throw any light on the ætiology of the condition." The typical botryomycotic bodies were not seen in sections stained with hæmatoxylin and eosin, by Weigert-Gram, or with toluidin blue.

Treatment.—The patient was watched until May 16th, 1934; his pulse and temperature were normal throughout, except on two occasions when he received injections of 0·45 g. N.A.B. (neoarsphenamine), each of which produced rather a severe reaction with a temperature of 101° F. Graduated doses of his vaccine produced no reaction. The lesions were painted daily with tincture of iodine. Mist. hydrarg. et pot. iod. three times a day for six weeks was administered. During the two months the patient was under observation his general health improved markedly, and he put on a stone in weight, but the tumour showed little or no alteration. It was then decided to give him an anæsthetic and scrape the growth away. On learning of this decision the patient discharged himself and has not been seen again. The N.A.B. was not pushed because the reaction after the second dose was worse than after the first. It is fairly clear that surgical removal of the tumour is the only treatment that would have been effective. The patient however seemed unwilling to lose the growth once his general health had improved; later it was discovered that the impressive appearance of the growth was a definite financial asset to him in his profession of beggar.

The growths on the leg and foot.

Castellani and Chalmers [1] consider botryomycosis to be a definite clinical entity. They say: "Sections show many young blood-vessels and vascular spaces which are surrounded by young connective tissue containing polymorphonuclear cells in which diplococci can easily be seen. In the very early stages the botryomycotic bodies cannot be seen. Later the growths are formed of dense fibrous tissue. The vascularity of some lesions is very marked, and Heuck considers that the condition is divisible into two categories, viz., the angiomatous and the simple. In the tropics the angiomatous is the common type." (They have, as illustration in their article, a good photomicrograph of a section which is almost identical with portions of the section examined here.)

MacLeod [2] states that "the name botryomycosis was originally applied by veterinary surgeons . . . from the belief that the lesion was due to an organism known at the time as a botryomyces . . . this view is no longer held and such lesions are now regarded as being of pyogenic origin."

In my opinion this case, which, clinically, was a typical botryomycosis at the time of observation, originated as a congenital verrucose nævus of the linear type, inclining to the ichthyosis hystrix variety, which later became infected superficially with staphylococci and streptococci, the outer layers of the lesion being thus converted into a granuloma pyogenicum.

I am indebted to Dr. E. Jamieson, chief medical officer, Anglo-Persian Oil Co., Ltd., for permission to publish this paper.

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MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the fever hospital medical services group of this society on May 31st, with Dr. H. S. BANKS, the president, in the chair, a discussion on the

Incidence and Management of Scarlet Fever Otitis

was opened by Dr. MURDOCH MCGREGOR. He began by referring to the statement of E. L. Ross (1924) that 10 per cent. of deaf-mutes and 10 per cent. of all cases of chronic otitis media owe their condition to scarlet fever. This made it exceedingly important that adequate measures should be taken in fever hospitals for the prevention and treatment of the acute stage. The incidence of otitis media complicating scarlet fever had not, in general, declined materially since the war, despite the mildness of the disease and despite serum treatment—in so far as the serum was given intramuscularly. In considering the incidence in any series it was important to know the proportion of cases under five years of age, since by far the heaviest incidence fell on this age-group. At the Park Hospital, London, the incidence in a large number of cases of about normal age composition (25 per cent. under five years) and treated with serum intravenously was 1·9 per cent.—a really encouraging figure.

Otitis media did not always proceed to suppuration. Routine inspection of ear drums revealed a small proportion of low-grade inflammations which usually subsided slowly over several weeks. This condition must be supervised if the child was discharged from hospital before it subsided completely. At the Park Hospital the ear drums of all cases about to be discharged were now inspected. Bacteriological examination of the discharge taken direct from the tympanum with suitable precautions showed pure cultures of hæmolytic streptococci during the first week or two: thereafter secondary infection with skin organisms tended to occur, and the latter gradually replaced the hæmolytic streptococci in the more chronic cases. A rigidly aseptic meatal toilet was therefore advocated—e.g., sterile wool mops, frequent deep meatal mopping followed by hygroscopic (glycerin and spirit) drops, and lastly the application of ointment to protect the skin of meatus and pinna. Routine early paracentesis before the membrane ruptured was an impracticable ideal. Often the first sign of otitis media in children was a discharge from the ear. Routine examination of all ear drums at least once daily had been attempted for a short time—e.g., at Los Angeles—but the labour and expense involved were beyond reason, although results were good.

For the cure of the discharging ear and prevention of chronicity Gardner (1922) and Harries and Gilhespy (1924) advocated early removal of adenoids, but Layton (1925) from experience in London fever hospitals was unable to support this thesis. Dr. McGregor proceeded to describe results of treatment of a consecutive series of 152 cases of aural discharge following scarlet fever, under the general supervision of Mr. T. B. Layton at the Park Hospital. No operative treatment of tonsils and adenoids was performed. An otological record of every case was made during treatment and just before leaving hospital. Treatment consisted of the meatal toilet described above, combined in some cases with zinc ionisation. Prognosis was found to be influenced by three factors: age (the younger the child the worse the prognosis); the presence of intercurrent infectious disease; and the treatment of the acute stage of scarlet fever with intravenous serum. The results of treatment showed a marked improvement on Layton's (1925) published results, especially in the age-groups beyond five years. The powerful new factor in the improvement appeared to be the intravenous serum treatment of the fever itself. Almost perfect results were obtained where zinc ionisation was used in the serum-treated cases, and controls treated without serum were not so satisfactory. The explanation of this difference seemed to lie in the good general condition and rapid subsidence of the nasopharyngeal congestion in the serum-treated cases. Experience with otitis following measles, in which zinc ionisation had little effect, apparently confirmed this view.

The PRESIDENT reviewed the statistical basis of the work at the Park Hospital described by Dr. McGregor. The incidence of scarlatinal otitis media as late as 1933 in the whole of the L.C.C. acute fever hospitals (19,069 cases) was 8·0 per cent. In published series of cases treated with intramuscular serum it varied from 3·5 per cent. (Harries 1930) to 8·4 per cent. (Craig, 1928). On the other hand, the incidence in his Leicester cases treated with intravenous serum was 0·9 per cent., and in his London series (1933 and 1934)1·9 per cent. The latter results were very similar when corrected for age-distribution, and they demonstrated the remarkable effect of intravenous serum in reducing the incidence of otitis media. As regards prognosis, the age-group 0–2 years was the worst, 51·4 per cent. failing to clear up in an average period of eight weeks, but none of these children had had intravenous serum. After 2 years of age there was a steep fall in the number of cases failing to clear up within eight weeks; the figure was 14 per cent. in the age-group 2–5 years, and only 2·8 per cent. in the age-group 5–15. The presence of intercurrent upper respiratory infections—e.g., nasal diphtheria, measles,whooping-cough,or tonsillitis—had a very bad effect on prognosis, 29 per cent. failing to clear up, as compared with 15 per cent. for simple scarlet fever. Further, the duration of the otorrhœa (in the successful cases) was almost doubled. The most striking factor in the prognosis was intravenous serum treatment, only 13 per cent. failing to clear up as compared with 28·2 per cent. in controls receiving no serum. With zinc ionisation in simple scarlet fever, 32 dry ears and 4 failures were obtained, as compared with 29 dry ears and 9 failures, where it was not employed. The worst combination was found in the cases treated without serum which contracted intercurrent respiratory infections. In this group even with zinc ionisation there were as many as 10 failures in 23 cases.

Mr. T. B. LAYTON said he wished to carry the discussion on to those cases which remained uncured at the end of the eight weeks. The first problem was to get these resistant ears dry, and thus prevent otological tragedies—such as sudden death from meningitis—in later life. The local treatment depended upon a principle, quoted by Lister in THE LANCET in 1867, that an inflammation tends to get well by itself if you remove the cause of the irritation. At this stage the products of the inflammation were responsible for keeping it going, and the removal of pus from the external auditory meatus was necessary to allow fresh pus to flow out from the middle ear. In other words improved education of the nursing profession was the most important factor in the treatment of ear disease. In addition movements of

the pharyngeal wall had a marked effect upon the middle ear, probably by opening the Eustachian tube and allowing drainage down it. The child should therefore be encouraged to use its pharyngeal muscles by every possible means—in laughing, singing, and by means of physical drill and nose-blowing exercises. From the point of view of getting an ear well he would rather have a child crying than stolid. It was impossible to cure otitis media in the children with the immobile faces to be seen in the glass rooms of the isolation wards; they must be taken out of such rooms if the ear was to be cured. The other way in which the cause of irritation could be removed from the middle ear was by opening the mastoid and preventing the discharge there formed from flowing over the mucous membrane of the middle ear. He called this the "clearing-up" mastoid operation, and if there were a choice between removing tonsils and adenoids or doing such an operation he would certainly prefer opening of the mastoid. It took longer to perform, and required more preparation and after-care, but from the patient's point of view it was a far smaller operation. People generally seemed not to realise how severe an operation to a child might be that of removal of tonsils and adenoids, with its three large wounds open on the surface and considerable trauma to the underlying tissues.

The second problem concerned the cases which were clinically well but which had some residual deafness or hardness of hearing. This was an educational problem, and he thought that a duty rested upon the medical profession to inform the educationists at once as soon as there was some suspicion of its having arisen. Presumptive evidence of deafness came under three heads: (*a*) where the illness had been a very severe one; (*b*) where on otological examination considerable destruction of the drumhead was seen; and (*c*) where there had been some suspicion of deafness during the stay in hospital. In all cases where there was such presumptive evidence there should be a special examination shortly after leaving the fever hospital. In Mr. Layton's opinion there should be set up in every area a liaison between the medical authorities in charge of the infectious hospitals and the educational authorities whereby every such case arising under the former was reported to the latter.

Dr. E. H. R. HARRIES said that, in his opinion, otitis media was the complication least likely to be affected by injection of antitoxin. Reference had been made to the Birmingham 1921–22 series (published by himself and Gilhespy in 1924) in which none of the cases were treated with scarlet fever antitoxin (not then available) and in which the incidence of otitis media had been considerably higher than in a series treated with intramuscular serum in 1930. In 1921–22, however, scarlet fever although already a mild disease was less mild than in 1930. In 1934 the disease was of trifling clinical severity, septic types of case being few and far between. Further, in 1921–22, early post-war years, nutrition was not satisfactory, and also the patients were mostly nursed in old, large and overcrowded wards. The bed-spacing of the 1930 series was much more favourable, whilst in a later (1934) London series, all treated with antitoxin intramuscularly, 12 ft. of wall space between bed-centres had been rigidly maintained. Dr. Harries stressed the vital importance of adequate bed-spacing not only in the elimination of droplet re-infection of the upper respiratory tract but in the prevention of hurried nursing by an overworked staff which resulted in manual transference of infection from the upper respiratory tract of one child to that of another. He thought that while the opinion originally expressed by the Dicks that scarlet fever antitoxin, by abolishing toxæmia, the better enabled the patient to withstand bacterial infection was probably true, he had at present no *proof* of its effect upon scarlet fever otitis.

Dr. A. T. W. POWELL referred to the follow-up which had been in operation in Walthamstow for some years. Cases discharged from the isolation hospital were seen at a weekly out-patient clinic in order to control late complications and to assess fitness as to school attendance. Those cases of chronic otorrhœa which had not responded to treatment in hospital were referred to the next following weekly aural clinic in the clinical care of Dr. A. R. Friel, who was also consultant aurist to the isolation hospital. Such cases rarely failed to respond to ionisation treatment; but arrangements existed for the reference of cases of chronic otorrhœa and mastoiditis for operative treatment at two local general hospitals.

Dr. DUNSTAN BREWER (Swindon) said that in the provinces some of the troubles to which Mr. Layton had referred did not exist, for the health services were not discoördinated as they were in London. For some years he had aimed at not discharging from the isolation hospital any child still suffering from ear disease. For 16 years he had been able to succeed, though recently there had been some failures. He supported strongly the conservative treatment of scarlet fever otitis.

Dr. E. W. GOODALL drew attention to the necessity for caution in drawing conclusions from sets of figures in which many variables appeared. Dr. Harries had spoken of the decline in the severity of scarlet fever during recent years. Otitis occurred most frequently in the severe cases, so that along with this decline there had also been a reduction in the incidence of otitis—as had been shown in a report published by the Medical Research Council six years ago in respect of the Eastern Hospital, Homerton. Of the principal complications of scarlet fever otitis had been the only one to show a decline. There was also a suggestion that severe cases and therefore otitis were commoner in epidemic times. All these facts had a bearing when one was considering the results of treatment.

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

A MEETING of this section on June 18th considered the relation to psychiatry of

Vocational Guidance

The subject was introduced by Dr. C. S. MYERS, F.R.S., who gave an illustrated demonstration of the methods now being worked out by the National Institute of Industrial Psychology, of which he is principal. Vocational guidance, said Dr. Myers, like medicine, is an art employing scientific procedure and knowledge, but dependent also on the exercise of judgment, tact, and intuition. The vocational adviser has not only to assess, by psychological and medical methods mainly of measurement, the mental and physical abilities and disabilities of the applicant in their relation to possible occupations. He has also to determine, by less scientific methods, the applicant's temperamental and character qualities, his interests, &c.—for which no tests are at present available. Further, he must consider the applicant's social, economic, and family environment, his personal and family history, and the opportunities and prospects which an occupation, otherwise judged suitable, may at the moment offer. He must have knowledge

not only of the conditions of entry, course and cost of training, nature of the work, pay, prospects and available vacancies in different occupations; but also of the mental and physical abilities and the qualities of temperament and character requisite for success in each occupation.

Dr. ANGUS MACRAE said that vocational guidance, considered in relation to mental health, is primarily a prophylactic service. Its aim is to prevent the strain which results from occupational maladjustment and which may be at least a partial cause of mental breakdown. Unlike psychiatry, it is a service for the normal individual. Nevertheless, it is important that the vocational adviser should be instructed in psychopathology and that he should have the coöperation of a practising psychiatrist.

There are, he said, many more or less normal adolescents whose vocational aims are influenced by unconscious strivings such as a person untrained in psychiatry might not understand. When, in such a case, the vocational aim is an unsuitable one, the adviser, if he understands the motivation of the choice, may be able to suggest an alternative career which, in addition to being appropriate in other ways, will provide the kind of satisfaction that the individual is seeking. Further, the vocational adviser, although he does not cater primarily for abnormal persons, sees a considerable number of maladjusted young people who might be wrongly advised if their characteristics, as shown at the vocational interview, were accepted at their face value. It is therefore important that the adviser, even if incompetent to diagnose the abnormality, should be able to observe that an abnormality exists, in order that the individual may receive psychiatric attention before a final vocational decision is attempted. Again, there are difficult cases of young people who, having been unhappy in their work, seek advice when contemplating a change of employment. In such cases the vocational maladjustment may be merely a symptom of an underlying emotional maladjustment, and there is a danger that the sympathetic adviser may encourage the individual to take to the path of the rolling-stone by recommending a change of work when what is required is psychiatric treatment.

It has been suggested, said Dr. Macrae, that the psychiatrist should be solely responsible for vocational guidance. It may be questioned, however, whether this plan is either practicable or desirable. Certain psycho-analytic writings suggest that, if conducted by psychiatrists of this school, vocational guidance would be based on a one-sided view of the individual and would yield distinctly unhappy results. But it is certainly true that the psychiatrist's contribution is one of great importance. How this contribution can best be made is a problem for the future. Possibly the solution is to be found in the extension of the child guidance movement. At present there is a growing tendency for vocational advice to be given by teacher-psychologists in the school; and there is also a growing tendency for psychiatric problems in the young to be investigated at child guidance clinics. There can be no doubt that, if the school adviser were more thoroughly trained in psychology, both normal and abnormal, and if there were closer coöperation between the school adviser and the clinic psychiatrist, the vocational advice given to the child would be greatly improved.

SECTIONS OF OTOLOGY AND LARYNGOLOGY

THE summer meeting of these sections was held at the University and the Royal Infirmary, Bristol, on June 14th and 15th. The chair was occupied by Mr. E. A. PETERS (otology) and Mr. W. M. MOLLISON (laryngology).

Mr. J. MORRIS, research engineer to an electrical company in Nottingham, read a paper entitled

Characteristics and Properties of Electrical Deaf Aids

He declared that telephone manufacturers were fully alive to the problem presented by the deaf and partially deaf person, and one company, the Erichsson, had devised a special amplifier with a volume control. An instrument with this object was at present under the consideration of the British post office authorities. None of the aids now in use were required to satisfy any particular standard, and they had not been standardised. There were three kinds of electrical aids: (1) individual aids, to be worn on the person; (2) semi-portable aids, needing to be conveyed in a case; and (3) group aids for use in such places as churches. He described the construction of each kind with the aid of photographs. The first kind of microphone, which had been finished with great care, had a useful "life" of no more than 14 days, for at the end of that time the crackling was unendurable. When a receiver was employed to reproduce speech over a vibration range of 125 to 3000 double waves per second, it should be the aim to arrange that it should not give a highly efficient response at any single frequency; there should be a maximum efficiency over a wide range of frequency. Considerable advances had recently been made in regard to microphone amplifiers, especially in instruments designed to aid bone conduction. The semi-portable aid was becoming increasingly popular. The third kind represented the ideal form for help in churches and other assemblies, their chief drawback being their high cost. It should be possible, the speaker thought, to devise, with the help of the National Physical Laboratory, a standard oscillograph test. Many forms of artificial ear had been devised, chiefly for the purpose of investigating the characteristics of telephone receivers and to make voltmeter tests, as the use of the human ear for this was irksome to the subject and apt to be inaccurate owing to fatigue. As to the prescribing of a form of aid for a deaf person, the pure-tone method left something to be desired, as in this the rectifying property possessed by the human ear was left out of consideration. Hence a second harmonic might be heard by the patient more distinctly than the fundamental note. The photo-electric talking machine had great possibilities.

In the ensuing discussion stress was laid on the need to protect the public from commercial travellers who were selling aids for the deaf. The point was raised that possibly the use of aids for special occasions might cause the hearing of a partially deaf person to deteriorate.

Mr. W. M. MOLLISON read a paper on the

Operative Treatment of Vertigo

He said that such diverse causes as wax in the ear and an acoustic nerve tumour could give rise to the syndrome consisting of deafness, tinnitus, and vertigo. Therefore the first step in treatment was to make sure that the external and middle ear, including the Eustachian tubes, were normal. A neurologist should be asked to eliminate any central nervous lesion, not forgetting the possibility of migraine. Toxic causes should be searched for in tonsils, teeth, sinuses, and other sources, and attention should be paid to the possibility of syphilis. After these researches had been

made there remained a group of patients, usually over 40 years of age, who had unilateral deafness of high degree, with tinnitus and vertigo. The vertigo usually came on in attacks which might last a few hours or a few minutes, often accompanied by vomiting and nausea, and hence this condition entailed great curtailment of normal activity. Mr. Mollison did not think it was always true, as sometimes stated, that vertigo ceased when the affected ear became quite deaf.

The most effective medical treatment to prevent these attacks was to give luminal orally, the dose being gr. ¼ once, twice, or even thrice a day. If the patient showed undue susceptibility to this drug, caffeine should be added. When drugs failed to relieve this crippling disability operation was justifiable. In his experience a simple procedure yielded good results. Fortunately one labyrinth only seemed responsible in most cases. Some years ago Mr. Sydney Scott had found that injection of absolute alcohol destroyed the labyrinth of the pigeon, and Mr. Mollison reasoned that the same substance might, if injected, destroy the function of the semicircular canals in man. He had therefore been injecting absolute alcohol through an opening in the external canal; 1 c.cm. of it was injected anteriorly in an endeavour to reach the vestibule. For from two to ten days thereafter the patient was very giddy, owing to the unbalanced action of the opposite labyrinth. In none of his cases had there been any sign of labyrinth infection. Twenty-eight of his 30 cases had been traced; 22 of them were cured of their vertigo, 3 were improved, while in 3 the vertigo was uninfluenced. He had carried out the same procedure in cases in which vertigo persisted after the radical mastoid operation. In these latter the old wound was reopened, and after thorough cleansing with ether, the external canal received the alcohol injection. To cover the hole in the canal, a temporal muscle flap was turned down into the cavity. Mr. Mollison only carried out this operation in cases of vertigo with deafness, and preferably in those whose deafness in the affected ear was of high degree, the opposite ear having good hearing. The procedure having no mortality, he argued that for these miserable patients it was fully justified. Among his guiding principles in selecting cases suitable for the operation were the exclusion of cases of middle-ear infection, especially mild Eustachian obstruction, and also of all cases of organic disease of the central nervous system, as well as those with otosclerosis, or with foci of infection.

Mr. W. THACKER-NEVILLE related the particulars of three cases in which he had employed the method just described. In the first no real giddiness remained, though the tinnitus was not improved, but in the other both vertigo and tinnitus were cured. The ages of his patients were 31, 40, and 55, the last was a woman.

Mr. SYDNEY SCOTT emphasised the necessity for accuracy in the injection, since during his pigeon experiments the bird died immediately when the alcohol was allowed to enter the vestibule. Alcohol spread and penetrated very quickly.

Mr. A. J. WRIGHT showed a case of aural vertigo in which he had injected alcohol through the oval window. The patient, a woman aged 52, had had left-sided tinnitus since she was 18. For five years she had had attacks of vertigo with vomiting, and once an epileptiform attack with loss of consciousness. On the left side she could hear conversation at 3 ft. distance. Under general anæsthesia he had injected 1 c.cm. of absolute alcohol by puncturing through the intact membrane and the footplate of the stapes. So far the procedure could be regarded as a success.

Mr. MUSGRAVE WOODMAN had been struck with the importance of Mr. Sydney Scott's work on the Eustachian tube; it was not sufficient to inflate that tube, one must be certain that air entered. In one case, a woman of 72 with giddiness to a distracting degree, who had refused any serious operation, he had punctured the drum. The small hole made remained open two months; for five years thereafter the patient was free of attacks of giddiness.

The PRESIDENT (Mr. Peters) was impressed by the method, particularly in cases in which the cochlea and the posterior semicircular canal were affected. It would be interesting to learn how far the alcohol penetrated.

A discussion took place on Saturday on two papers dealing with

Sinusitis and Infections of the Eyeball

Mr. E. R. CHAMBERS read the first paper, from the ophthalmological standpoint. He said that in many cases of eye trouble the nasal sinuses could be held responsible, though there might not be any obvious sinusitis. In dealing with these ocular infections, especially of the cornea, no time must be wasted, owing to the danger of the rapid supervention of visual defect. A few ocular conditions which did not respond to local treatment of the eye cleared up when the nasal infections had been dealt with. Conjunctivitis, chiefly affecting the lower lid, with little discharge but with itching and burning aggravated by bright light, dust, and wind, cleared up usually with simple ocular antiseptic treatment, but recurred as soon as that treatment was stopped. In some of those cases there arose a thickened velvety condition of the conjunctiva, and this was often due to nasal infection. Episcleritis, characterised by chronicity and recurrences, and often ascribed to rheumatism because of associated pains or neuritis, was usually the result of an endogenous sepsis, and generally a cure followed treatment of the sinuses or the elimination of the particular focus of infection. Any type of keratitis could be due to endogenous sepsis, but one kind was due more to sinus infection than to anything else; first only one eye was attacked and the condition remained localised for a time. Often the existence of the eye condition deflected attention from the prime cause, a septic focus possibly at a remote spot. In all such cases the sinuses should be investigated. Irido-cyclitis was due to a blood-borne infection, from sources outside the eye, and nasal sinus infection often played a large causal part in it. Retinal hæmorrhages and the presence of exudates were indications for investigating the sinuses. A suspicious happening was a sudden loss of central vision in young and apparently robust persons; these might disclose a small hæmorrhage at the centre of the retina, when in the speaker's view the cause was an endogenous infection often in the nasal sinuses or the teeth, the toxins of which had caused damage to the capillary wall followed by hæmorrhage. Finally Mr. Chambers spoke of a papillœdema of the optic nerve, in cases of which a swelling of 4 to 6 diopters might be present. With such marked swelling the suspicion of an intracranial condition might be entertained, but in this case it was unilateral, and there were no positive neurological findings. Often in these cases the sphenoidal sinus was implicated.

Mr. ERIC WATSON-WILLIAMS also emphasised the great importance of sinus examination in cases of failing sight, especially in young persons. The relationship could hardly be denied when the turning-point

to recovery was treatment of the sinuses. The cases detailed illustrated three special points: the first was that often there was no manifest local evidence of infection. Patients whose noses were stuffed with polypi or were freely discharging pus, might be quite well in themselves with only local trouble. It was when local reaction was so slight as to attract no attention that toxic absorption seemed especially liable to occur, producing characteristic changes, ocular, nervous, or arthritic. In three of the five cases specially mentioned, rhinoscopy gave no result. The second point concerned the difficulty of excluding sinusitis on X ray evidence. In two of the five cases the report on the skiagrams was negative although sinusitis was discovered, and in two others the skiagraphic evidence was not borne out by the operative findings. The third point was the readiness with which the eye conditions yielded after the sinus disease had been dealt with, although the former had previously been intractable. Hence the reflection could not be avoided that early sinus treatment might have conserved the eyesight in many cases in which it had been damaged or lost.

The PRESIDENT (Mr. W. M. Mollison) said that there had not been presented to the meeting anything approaching mass statistics to show the frequency of the inter-relation between sinus and ocular disease. At Guy's Hospital the speaker had had many eye cases referred to his nose and throat department, but in a great number of them he had found nothing wrong with the sinuses, though every now and then he did find a diseased sinus. He asked why acute conjunctivitis was found in patients with antrum disease.

Mr. E. A. PETERS questioned the mode of extension in these cases, and referred to a case in which whenever the man blew his nose his lacrymal sac distended.

Mr. A. TWEEDIE referred to the importance of the degree of alkalinity of the culture medium when searching for organisms; sometimes no growth developed on a hyper-alkaline medium.

Mr. BROUGHTON BARNES spoke of a case in which, in a boy, the nasal swab bore *Staphylococcus aureus*; the boy died in six days of cavernous sinus thrombosis.

Mr. J. F. O'MALLEY said that the cases in which there could be no question of contiguity forced the conclusion that for the most part the relation of sinuses to ocular disability was one of a common endogenous infection. A circulating toxin tended to manifest itself at some time in the excretory organs; there might occur a glomerular nephritis, or a skin rash.

Mr. RITCHIE RODGER remarked on the frequency with which, in such cases as had been mentioned, the tonsils were at fault.

Dr. PAVY SMITH commented on the fact that the selected cases on which Mr. Watson-Williams's paper was based were all recent, and asked for a later report at a subsequent meeting, owing to the possibility of relapses.

Mr. JOHN PHILLIPSON spoke of the importance of making an exploratory suction puncture of the sinuses in all cases of discharging nose.

The session was concluded by a discussion on

Obstructions of the Trachea

Mr. LIONEL COLLEDGE, opening, said this subject showed great possibilities in the direction of errors of diagnosis and misdirected treatment. The causes of tracheal obstruction were divisible into extrinsic, compression of the trachea, and intrinsic, being diseases of the tracheal wall. In the former group were included mediastinal tumours, enlarged glands, and aneurysms, and, most important, goitres and cancers of the œsophagus. In benign goitre enough of the goitre should be removed to stop the pressure on the trachea. The real difficulty was the dyspnœa caused by malignant goitre, which was often accompanied by paralysis of the vocal cords and by œsophageal cancers. In malignant goitre cases, whether the cords were paralysed or not, no attempt should be made to perform tracheotomy. Crile's idea in such cases was to relieve the dyspnœa by a decompression operation, by division of the sterno-thyroid and sterno-hyoid muscles, thus allowing the tumour to expand outwards. As, however, these muscles were usually already invaded by the growth the suggestion was scarcely practicable. Sir Felix Semon long ago warned those doing tracheotomy for double abductor paralysis to be on their guard as they might encounter another obstruction lower down.

Diseases of the tracheal wall itself were rare; here might be encountered syphilis, tuberculosis, or new growths. Syphilis in the trachea, apart from that in the larynx, usually responded well to antisyphilitic measures, and the tendency to stenosis following such treatment in the larynx did not obtain in the trachea. Apart from tuberculous laryngitis, tuberculosis of the trachea was very rare, but one such condition he described in a man aged 56, who had pronounced tracheal stridor, with an immobile larynx. Below the cords, which were moving well, a grey swelling could be seen. Tracheotomy was done, but there was much granulation tissue, and the patient had difficulty in getting rid of the large plugs of material. No kind of medication seemed to give much relief. Accordingly the affected part of the trachea was removed, and it gave astonishing relief. Tuberculosis bacilli were easily demonstrated.

Primary tumours of the trachea were very rare. Mr. Colledge described a case in a waiter, aged 37, who had a tracheal carcinoma and was treated by endoscopic methods. The man breathed freely through the tube, and his voice was almost normal. He remained well for ten years, and was able to continue his work. Then he had a recurrence of the obstruction and drowned himself. In many of these cases the first diagnosis was asthma. He related cases in which the tumour was made to shrink by the repeated application of deep X rays.

Mr. F. C. ORMEROD related a number of instructive cases of tracheal obstruction, and concluded by showing skiagrams to illustrate the ingrowth of malignant tissue direct from the upper lobe of the lung through the wall of the trachea. Such a growth, he said, originated in a small upper lobe bronchus, and often reached the lumen of the trachea by direct infiltration before emerging from the main upper lobe bronchus.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT the last meeting of this society, held in Newcastle-upon-Tyne, Mr. WILLIAM HUNTER read a paper on the *treatment of the post-hæmorrhagic state*. He defined it as "that state which follows the rapid loss externally of a quantity of blood sufficient to give rise to symptoms and signs," and said his object had been to evolve a practical routine for early emergency treatment. Here the aim was to restore a normal efficient circulation and so get rid of the

anoxæmia; the capillary walls must be brought back to their normal state and metabolism must be accelerated to restore the functions of the various organs of the body. The treatment adopted consisted in intravenous infusion of glucose-gum solution (at the rate of 30 to 40 minutes per pint) with intramuscular injection of insulin, allowing 1 unit of insulin for every 3·0 g. glucose; ephedrine hydrochloride in 1-grain doses was found most efficacious for raising the blood pressure. After this emergency treatment, blood transfusion employing the citrate method was advisable. Cardiac and circulatory stimulants were not found to be of great value.

Mr. HARVEY EVERS and Mr. FRANK STABLER reported two cases of *severe dysmenorrhœa associated with protein sensitivity*. In the first case dysmenorrhœa accompanied by giant urticaria was ushered in by vaccination. After carefully testing the cutaneous sensitivity to various protein products, it was found that the patient was sensitive to wheat. Exclusion of this from the diet cured the condition.

Dr. E. FARQUHAR MURRAY read a paper on *radium treatment for gynæcological conditions in the Newcastle Centre*. He traced the history of radium treatment in the gynæcological department from 1920, and said that since 1932 this treatment had been intensified and operation had been abandoned in cases of carcinoma of the cervix. The Stockholm technique had been employed, and the results were as follows:

1930	..	..	50	per cent.	alive after	4	years
1931	..	..	53	,,	,,	3	,,
1932	..	..	82	,,	,,	2	,,
1933	..	..	81	,,	,,	1	,,

The results in women over fifty had been very good; the treatment of recurrences was discouraging. For some years radium had also been used for all cases of carcinoma of the body of the uterus, and the general improvement obtained had been favourable to continuance, several cases having passed a three-year period without trouble. Upper vaginal growths had followed the course of cervical lesions; lower vaginal growths gave disappointing results. Vulval growths did not seem to respond to radium treatment to any extent, and the tendency had been to excise them wherever possible and to use diathermy for those which were definitely inoperable.

REVIEWS AND NOTICES OF BOOKS

Method of Action of Radium and X Rays on Living Tissues

By HECTOR A. COLWELL, M.B., Ph.D., M.R.C.P., D.P.H., The Barnato Joel Laboratories, Middlesex Hospital. London: Humphrey Milford, Oxford University Press. 1935. Pp. 164. 15*s*.

IT is a pleasure to welcome in book form the essay which was awarded the Garton prize and gold medal of the British Empire Cancer Campaign, 1934. Dr. Colwell has assembled the experimental evidence accumulated by many workers over a long period, has added to it the results of his own experimental work, and has produced an authoritative account of the chemical and general effects of radiation on living tissues which is at the same time a work of reference and a stimulus to further study.

In an introductory chapter he recapitulates the accepted teaching on the chemical and physical structure of the cell as shown by micro-dissection, chemical analysis, or special staining methods. He then proceeds to show the proved effects of radiation on the cells whose structure he has described, beginning with changes in the viscosity of colloids, and the oxidation and reduction phenomena which may be related to metabolism in living cells. The texture of the argument is close, and to appreciate it fully a considerable knowledge of the chemistry of proteins and the interactions of enzymes both in normal processes and in autolysis are necessary; but the fact is made quite clear that doses of radiation within the limits of those used in therapy definitely affect the cell constituents both chemically and physically, and that the most important changes occur in the nuclear and cell membranes. Of particular interest are the references to the author's own work in collaboration with R. J. Gladstone on the effects of X rays on developing chick embryos and on rat liver. They were able to demonstrate the partial, or even complete, disappearance of the divisions between the cells, sometimes with the formation of a syncytium, and this gives histological support to the chemical evidence of a special action which is increased by the presence of certain elements, such as copper or silver in colloidal form.

Immunity reactions are subjects of controversy; many opinions are quoted of which the results are discordant, and no conclusions are reached. On the other hand, resistance to tumour growth as a result of the inoculation of fragments of irradiated tumour, as shown in the experiments of S. Russ, H. Chambers, and G. Scott, is accepted as an important observation. The suggestion is that a substance inhibiting tumour growth is obtained at a definite point in the autolysis of tumour cells. This reaction does not appear to be peculiar to the autolysis following irradiation, as it has also been produced by cutting off the blood-supply of Jensen rat sarcoma for a definite length of time, just enough to allow of the development of the transitory inhibitory substance without the more complete destruction of the cell which carries with it the release of a stimulating substance. It is pointed out that the very transitory and uncertain changes make it difficult to imagine that this resistance can be hoped for as a result of the irradiation of clinical tumours.

The action of radiations on malignant growths remains a subject of considerable difficulty, particularly when the treatment of human cancer is referred to. The confusion of terms and the different methods of calculating dosage used by different workers make their observations difficult to collate. The gross changes are well known, and there is much of interest in the histological studies detailed, but they would be of greater value could we be certain that the tissues received a reasonably homogeneous radiation of measured intensity. Much stress is laid on the lethal dose as determined by the disappearance of tumours in vivo, or the amount of radiation necessary to prevent a tumour radiated in vitro from taking when inoculated into a fresh host. This is undoubtedly an important method of determining dosage, but it is to be hoped, in view of the discussions on the unit of dosage, that Dr. Colwell will at some future date summarise the effects of doses measured by physical methods.

The questions of wavelength and of relative sensibility are discussed, and the view of Russ and Scott that the relative radiosensitivity of skin and tumour tissue may be reversed by different wave-

lengths is quoted as a valuable practical contribution. Throughout the book the practical aspect of the subject is emphasised, and the need for experimental radiology is made increasingly clear. There is an excellent bibliography, and the book is well printed in clear type.

A Manual of Diseases of the Eye

Seventh edition. By CHARLES H. MAY, M.D., and CLAUD WORTH, F.R.C.S. Eng. Extensively revised by MONTAGUE L. HINE, M.D. Lond., F.R.C.S. Eng., Surgeon to the Royal Westminster Ophthalmic Hospital. London: Baillière, Tindall and Cox. 1934. Pp. 505. 15*s*.

THE revision of the text has been very efficient in this edition. Though there is a good deal of new matter concerning modern developments such as the orthoptic treatment of squint, and the operative treatment of detached retina, some of the chapters contained in recent editions, such as Mr. Devereux Marshall's chapter on colour vision and Mr. S. H. Browning's on vaccine treatment in ophthalmology, have been curtailed, so that the size of the volume has not been materially increased. In the chapter on detached retina there is a new coloured plate depicting a very evident tear in a large detachment. The student must not expect all his cases to be so easy to diagnose with the ophthalmoscope. The most modern methods of treatment by diathermy, according to the methods of Larsson and Safar, are referred to but a full description of them is beyond the scope of such a work as this. The illustrations, which have always been a feature of this work, now number 350, including those on 25 coloured plates. This in itself should commend the book to students.

Human Stupidity

A Short Introduction to the History of Human Stupidity. By WALTER P. PITKIN. London: George Allen and Unwin Ltd. 1935. Pp. 574. 12*s*. 6*d*.

Mr. Pitkin has written an important and arresting book on Stupidity which, he maintains, is the fly in the ointment of our civilisation and has always been so. He has little respect for physical "toughness." "Those very powers of resistance," he says, "which pulled us through the bitter half million years contributed much to the dulness and general slow wit of the race. Yesterday's virtue has become to-day's evil." This is only one of many striking and challenging observations in this exhaustive, though never exhausting, book. "For half a million years the typical man at his best was a child's mind with a youth's outlook on life. Being on the whole poorly nourished, his behaviour approximated that of a poorly nourished adolescent." The causes of our stupidity are apparently legion, ranging from heredity to hookworm. It is stupidity which makes even the physically strongest of us submissive and so leads to war. "Not all the discoveries and inventions of mankind since the close of the Pleistocene age have benefited the race as extensively or as intensively as the war morons and war maniacs have harmed the race." The book ends on an optimistic note. Thanks to science, "for the first time in the career of mankind superior intelligence can wholly dispense with the aid of the dull and the otherwise inferior." Altogether this is a most entertaining book full of facts, figures, and daring—sometimes too daring—deductions. Though denunciatory in the extreme, Mr. Pitkin writes with kindliness and humour rather than with bitterness.

The Carbohydrates

Fifth edition. By E. F. ARMSTRONG, D.Sc., F.R.S.; and K. F. ARMSTRONG, M.A., B.Sc. London: Longmans Green and Co. 1934. Pp. 252. 15*s*.

THAT highly respected work "The Simple Carbohydrates and the Glucosides" first appeared in 1910, but after the appearance of the fourth edition in 1924 it underwent binary fission into "The Glycosides" (1931) and the present volume. The latter provides a condensed and readable account of the important information available on an interesting group of the organic compounds. Just as some of the greatest music was produced under the rigid restrictions of the sonata form, so nature has produced some of her most useful substances by the arrangement of 6 carbon, 6 oxygen, and 12 hydrogen atoms whilst adhering to rigid rules of valency and some arbitrary configurations. The study of the simple sugars is not merely a study of permutations, solid geometry, and organic chemistry; most absorbing is the consideration of why only certain of the possible compounds have been selected to appear in the plant and animal world. The medical reader will be amazed at the rapid progress in our knowledge of the structure of the carbohydrates. Starting from the establishment of the molecular configuration of the two ring types of glucose it has been possible to develop with great accuracy and detail the actual configuration of the higher saccharides. The structure and spacial configuration of the disaccharides and oligosaccharides have now been worked out and even the higher polysaccharides are yielding their secrets. In this book a most difficult subject has been clearly presented and the references are accurate and remarkably complete.

British Journal of Children's Diseases

To the April–June issue (vol. xxxii.) Dr. E. Ashworth Underwood contributes the first part of a paper on the Neurological Complications of Varicella. He reports a case of his own and reviews 119 others which he has collected, together with 23 which are often quoted but which he discards. He adopts the classification of Berode and Miget, which consists of a group of prodromal symptoms, and six other groups—viz., meningo-encephalitis, encephalitis, myelitis, neuritis and polyneuritis, ocular manifestations, and "other conditions."—In continuation of his analysis of Over Four Thousand Cases of Educational Deafness, Mr. Macleod Yearsley deals with doubtful cases, of which there were 105 in his series, and deformities of the external ear, of which there were 22. He then discusses the prevention of congenital and acquired deafness. The causes of the acquired cases of which there were 2787 were as follows: diseases of the nervous system 382 (13·6 per cent.), infectious diseases 967 (34·7 per cent.), and primary ear diseases 1438 (51·5 per cent.). The principal infectious diseases responsible for deafness were scarlet fever, measles, and diphtheria in the order named.—In a paper on Cancrum Oris in Ancient Rome, Dr. W. J. Rutherfurd refers to the description of this condition by the poet Martial, and the various local remedies recommended by Celsus for faucial ulceration and cough in general. In a postscript the editor remarks that the diagnosis of cancrum oris in Martial's epigram—which has been made among others by Ménière and Raymond Crawfurd—is much more likely than that of tertiary syphilis which was suggested by Buret. The abstracts from current literature are devoted to acute infectious diseases.

THE LANCET

LONDON: SATURDAY, JUNE 22, 1935

A DIPLOMA IN ANÆSTHETICS

SINCE specialisation is a necessity of modern medicine, it is good that the public should be able to learn whose training and experience has made him an expert deserving recognition as such. The issue of special diplomas helps to make a rarer phenomenon of the sort of amateur specialist who is a danger to the public as well as an unfair competitor with the practitioner of all ranks. The arguments in favour of such diplomas are forcible, though many members of the medical profession feel that the institution of each new one implies yet another encroachment upon general practice. Of the two diplomas recently instituted by the English Royal Colleges, in child health (D.C.H.) and in anæsthetics (D.A.) it is the latter which is more likely to give rise to misgivings, since there are firms where one of the partners acts regularly as anæsthetist in circumstances arising out of the conduct of the practice, save where the nature of the case or the wishes of one of the parties concerned demands a specialist. It would be embarrassing to a surgeon in the habit of working with a particular anæsthetist to receive a suggestion that in the place of his usual coöperator in the district he should obtain the services of one whose ability is guaranteed by the new affix, but whom he may never have worked with. There are districts of considerable importance where practitioners have secured among their colleagues a sound reputation as anæsthetists. In fact the combination of general practice with specialisation in anæsthetics is a very usual one even in the large towns, and has advantages from every point of view. It would be calamitous, therefore, if the attitude were to be adopted that it is a dereliction from duty on the part of the practitioner or affection on the part of the relatives to summon anyone without a special diploma to give an anæsthetic. On the other hand, it often happens that a surgeon operating away from his usual neighbourhood has to take on trust the services of an anæsthetist whom he has never heard of; and it will be not only a great relief to him but a notable advance towards the reduction of operative risks to have spread throughout the land a number of practitioners on whom surgeons can rely with confidence for satisfactory service in anæsthetics. The particular diploma under consideration is not so constructed as to select only the super-anæsthetist. On the contrary the examination and credentials which qualify a candidate for the distinction are of such a kind that every competent anæsthetist of fairly wide experience should be able to pass the test imposed. This seems to us to be the right principle to follow in setting up a diploma in a subject where practice counts so much more than theory.

We publish elsewhere in this issue a list of ten well-known anæsthetists who have been awarded the diploma, without examination, under conditions detailed on p. 1479. In the future examinations will be held twice yearly, in May and November. The tests will be written and oral, and the subjects include history, theory, and practice of anæsthetics; pharmacology and elementary chemistry of anæsthetic drugs; and pre- and post-operative conditions relevant to anæsthesia. A candidate for entrance to the examination must either have held a resident appointment in a recognised general hospital for twelve months, of which at least six shall have been as resident anæsthetist, or else he must have administered anæsthetics in a hospital on not less than one thousand occasions, at least one-half of which shall have been for major surgical procedures. The above conditions may be modified, it is stated, for candidates who have carried out original investigations in the science or practice of anæsthetics or whose studies have been extended over a long period without fulfilling the exact conditions.

The D.A. is an interesting innovation, for it is the first of its kind in any land. It is fitting that it should originate in this country, for the English-speaking nations may legitimately claim to have led the world in all that pertains to general anæsthesia. In them almost exclusively is to be found a body of practitioners who devote their professional lives entirely to the administration and teaching of anæsthetics. The importance of this branch of work from the point of view of safeguarding human lives as well as from that of the assurance of the best possible results following surgical operations needs no demonstration, but it has been slow of recognition. Even in the land of SIMPSON, SNOW, HEWITT, and DUDLEY BUXTON, anæsthetists are only now beginning to get the consideration which their influence on the welfare of patients amply demands. In continental countries the recent formation of societies of anæsthetists, with associated official journals, shows that abroad also the Cinderella of medical specialties is beginning to reach a position equal to that of her elder sisters. The growing popularity of regional and local methods and of basal narcotics should mean not the curtailment of the general anæsthetist's activities, but the enlargement of his scope, and an increasing appreciation of the need for expert handling of the many new methods of making the patient insusceptible to pain impulses.

UNDULANT FEVER

UNDULANT fever is now recognised as an endemic disease in almost every country of the world. The primary reservoir of infection is in animals, and it is from animals that infection is transmitted, directly or indirectly, to man. In countries where goats and sheep are common, the main type of infecting organism is *Brucella melitensis;* in countries with a predominant cattle population the corresponding organism is *Br. abortus;* while the porcine *abortus* type, sometimes referred to as

Br. suis, seems to be confined almost entirely to the large hog-raising districts in the middle-western states of North America. During the past few years several reports have been published assessing the probable incidence of undulant fever in different countries. The difficulties of obtaining accurate information on this point are very great, partly because undulant fever is not generally a notifiable disease, partly because active infections with brucella are often atypical, and partly because an exact diagnosis can be made only on bacteriological grounds. In this country, where the disease is not notifiable and bacteriological examination of pyrexial cases is not undertaken as a routine, the number of collected cases must obviously be inferior to the real number. In countries such as Denmark, on the other hand, where the blood of pyrexial cases from all over the land is sent in to one central laboratory at Copenhagen, a much more accurate assessment can be made of the real number of active brucella infections. Dr. GUNNAR OLIN, who has just produced an extraordinarily valuable monograph on undulant fever in Sweden,[1] gives the following figures for the annual incidence of this disease during the five-year period 1929–33: Germany 8·3, Sweden 18·4, and Denmark 150 per million of the population. The much higher figure for Denmark is partly due to the larger number of cattle and the wider distribution of contagious abortion, but is undoubtedly ascribable largely to the centralisation of laboratory control and the facilities afforded, even in country districts, for adequate bacteriological examination.

Bearing these points in mind, it is interesting to consider the figures given in another part of our issue by Dr. BEATTIE, Dr. SMITH, and Prof. TULLOCH for the incidence of undulant fever in Scotland. By private investigation, and through information supplied by the Scottish Department of Health, they have been able to collect records of 97 cases of undulant fever occurring since 1930—an average incidence of some 20 cases a year. For reasons similar to those just discussed, it is certain that this incidence underestimates the true incidence of the disease. It is noteworthy, for example, that the collected cases occurred around centres where bacteriological investigation of the disease was being carried out, and that the incidence among doctors and nurses was considerably greater than that justified by the ratio they bear to the total population. These findings are very similar to those in England and Wales in showing that the number of cases detected is in proportion to the frequency of bacteriological examination. Thus the apparent incidence is greater in towns than in country districts, because laboratory facilities are more readily available in urban areas, and it is greater in doctors than in other occupational classes, because doctors suffering from undiagnosed pyrexia insist on a proper diagnosis being made.

With regard to the route of infection, the Scottish investigators are again in agreement with the conclusions reached by numerous workers in other countries. Only 14 out of their 97 patients had any direct contact with infected animals, and it is these patients alone that are likely to have been infected through the skin. The remainder had probably been infected by consuming raw milk or cream. Though contagious abortion is known to be widely distributed among the cattle of Great Britain, and though it has been shown that about 30 per cent. of samples of raw milk retailed throughout the country contain living *abortus* bacilli, doubt is not infrequently cast on the milk-borne origin of undulant fever in man. It is asserted that, if milk was responsible for infection, there ought to be a much closer relationship than apparently exists between the per-caput consumption of milk and the frequency of undulant fever. To those who are ignorant of the complexities of epidemiological inquiry, this argument is undoubtedly attractive, but it requires little knowledge of the distribution of human and animal disease to realise that such arguments are often fallacious. It is known, for example, that the malarial parasite is borne by anopheles mosquitoes, but numerous surveys in different countries have failed to show a direct relationship between the prevalence of anopheles and the incidence of malaria. The carriage of malarial parasites by anopheles, or of *abortus* bacilli by milk, is merely one of the factors that finally determine whether a given person shall or shall not develop clinically evident disease. The size of the dose, the frequency of the dose, the time intervals between successive doses, the immunological state of the patient, his past experience with the infecting agent, physiological and hygienic conditions at the time—these and doubtless other factors probably all play a part in determining the outcome of an infection. What is far more important than the quantity of the milk is the quality of the milk consumed in relation to the incidence of the disease. On this point the available figures are very suggestive, showing that in towns where most or all of the milk is pasteurised undulant fever practically does not occur. The few cases that have been observed in London, for instance, where about 95 per cent. of the milk is pasteurised, have been traced to raw milk. Among the Scottish cases, it may be noted, there were four patients who consumed large quantities of raw milk for medical reasons. It is pointed out that when practitioners order a milk diet for their patients they should insist that the milk should be pasteurised or boiled.

Dr. BEATTIE and his collaborators are silent on the treatment of the disease. Considering the seriousness of undulant fever in the individual patient, it is time that an inquiry was set on foot to discover some useful form of treatment. Ordinary vaccine therapy has, on the whole, proved very unsatisfactory, nor have chemotherapeutic measures justified themselves. The use in the United States and in certain European countries of melitin or abortin has apparently met with a limited success, but very little exact information on the results is obtainable. In Italy intravenous vaccine inoculations are being advocated, the intention being to provoke a severe constitutional

[1] Studien über das Undulantfieber in Schweden. By Gunnar Olin. Stockholm: Isaac Marcus Boktryckerei-Aktiebolag. 1935.

reaction similar to that in ordinary protein shock therapy. Fortunately the case-mortality of the disease does not usually exceed 3 or 4 per cent., and except in persons suffering at the same time from some other condition it is usually safe to give a favourable ultimate prognosis. This in itself is encouraging both to the patient and his relatives in a disease whose average duration is about three months.

A CHILDREN'S IMMUNOLOGY CLINIC

AT the Rome Hospital Congress, of which a brief account was given in our last issue (p. 1397), Dr. A. F. COONEY spoke of a change in the attitude of public health authorities with which the hospitals in their area would have to reckon. Hitherto, he said, the advice of the hospital had usually been sought for illness. Now local authorities are seeking its aid in the prevention and preventive treatment of disease. Dr. COONEY is secretary of the Irish Hospitals Commission and although he expressly stated that the views he was ventilating were his own it may be taken that the tendency is clearly to be seen at Dublin hospitals. Since he spoke a hospital in London has announced an excursion into preventive medicine, which has perhaps no parallel in England. On Thursday evenings and, if necessary, on Saturday mornings, an "immunology clinic" at the Hospital for Sick Children, Great Ormond-street, will undertake Schick, Dick, and Mantoux tests, skin tests applied in hay-fever and other allergic conditions, as well as active or passive immunisation against diphtheria, scarlet fever, and measles, and the treatment of diphtheria carriers. The departure will provide an opportunity to obtain experience now lacking in many different directions. The inclusion of vaccination against whooping-cough indicates, we hope, an attempt to find by controlled investigation on a large scale which, if any, of the several vaccines described in the literature is effective, and in what dosage. The position is different in regard to convalescent measles serum, for here the value is well recognised, it is the supply which is failing.

Seven years ago, acting on a suggestion from the Ministry of Health, the Ormond-street Hospital prepared this serum on a scale sufficient to supply a certain number of institutions and private practitioners. At the present time the supply is very limited and the hospital is urging practitioners to persuade adult patients who have had measles within the last few years to volunteer as donors, during the non-epidemic periods, and so avoid the rush which is bound to occur when measles again becomes epidemic. The efforts of the London Fever Hospital and the Oxford medical authorities, for example, are already securing a harvest by no means negligible, but it is probable that a campaign as energetic as the anti-diphtheria propaganda in New York, or the devoted work of those who have built up the magnificent blood-transfusion service in London, would discover in the community further supplies of convalescent measles serum, or the less efficient but useful "adult serum." But a vigorous campaign by some organisation such as the British Medical Association or the Society of Medical Officers of Health will be needed to achieve an adequate general supply of this life-saving material for ill or very young children. We note with pleasure that the B.M.A. Council is to ask the representative body of practitioners to urge on local authorities the establishment of adequate machinery for the collection and storage of convalescent serum. Is it too much to hope that the clinic may help to solve another problem? D'ARCY HART'S figures show that of every 100 city children aged 7 apparently non-tuberculous 30 are positive to the Mantoux test. What we urgently need to know is this—which group will show in later life the greatest incidence of disabling tuberculosis, the 30 positive or the 70 negative? Then it may be possible to take precautions for the safeguarding of the more susceptible child.

ANNOTATIONS

HUMAN STUPIDITY

"Gegen Dummheit kämpfen die Götter selbst vergebens."

Is there a stupidity that shapes our ends? Mr. Walter P. Pitkin thinks there is and has written a book, reviewed elsewhere in this issue, to prove it. This book is some 200,000 words long and is called, perhaps in irony, "A Short Introduction to the History of Human Stupidity." In it Mr. Pitkin attempts to sustain the novel thesis that civilisations and cultures are moulded not by those of outstanding ability but by the stupid who, it seems, are always in the majority. By stupidity we are to understand, among other things, "a lack of sensitivity," "a state of confusion and low velocity" (presumably mental), or "an inability to cut through to the heart of a situation or problem." Very few of us will be able to escape conviction on one or other of these counts. In the bad old prehistoric days, according to Mr. Pitkin, it was only the stupid, that is, the relatively insensitive, who were able to survive the rigors of life on this planet. Hence, he argues, our ancestors were the clods of humanity and we are the children of clods unto the nth generation, including, of course, Mr. Pitkin himself as, to do him justice, he would be the first to admit. Thus stupidity persists as the supreme social evil. In fact, to such depths of stupidity have we sunk that the tail wags the dog. However comparatively sensible some of us may be there is, apparently, a ten-to-one chance against even the most intelligent of us acting intelligently in any given set of circumstances. Mr. Pitkin has collected a formidable array of facts all, doubtless, authentic. But some of his deductions from these facts are not by any means acceptable to those with special knowledge. A mere doctor, for example, might agree that "the woman who frequented a beauty-parlour where she was rolled and pounded in an attempt to keep slender" was essentially stupid. He might be sorry to hear that she subsequently developed cancer of the hip. But if he accepted the deduction, as Mr. Pitkin appears to do, that the former folly caused the latter catastrophe, he would be proving Mr. Pitkin's main thesis of human stupidity rather than the causative relation suggested.

Many of Mr. Pitkin's denunciations of historic acts of stupidity are doubtless well-merited. It is, however, proverbially easy to be wise after the event more especially when one is in full possession of the facts and can see them with detachment and in retrospect. Nor is it always just to condemn an act as stupid having first removed it from its proper context in time and space. No doubt, for example, the *Titanic* disaster should not, and need not, have occurred but it is manifestly unfair to condemn the stupidity of the wireless operators for paying too little regard to ice-warnings when they were, in common with their superiors, bent on making a record trip. Nobody expects a big ship to sink on her maiden voyage. Are we to be called stupid if we fail to make sure that the spokes of our car-wheels are sound every time we drive it? A surfeit of caution may be just as ludicrous as the lack of it may be disastrous and probably few men, except perhaps postmen, think it worth while to insure their trousers against dog-bites.

Nevertheless Mr. Pitkin's book is a slashing indictment of human behaviour not to be lightly dismissed. No nation or calling seems to have escaped his whip except, perhaps, the profession of medicine. It is difficult to see why this invidious distinction should have been made unless it be that the author felt that the balance of stupidity lay with the patient rather than the doctor. Much of what he has to say rings uncomfortably true. In spite of all, he remains an optimist and a constructive one at that. Nothing, he thinks, will be accomplished by religion, nor by moral drill, nor, least of all, by laws. Science will save us. His prophecy of an Utopian world saved from stupidity by science makes cheerful reading and it is a tribute to his book that we recommend the average *laudator temporis acti* to stop and buy one.

VARIETIES OF TUBERCLE BACILLUS

IN recent Annals (January–February, 1935) of the Pasteur Institute is presented an exhaustive study, illustrated with more than one hundred excellent photographs, of the morphological, cultural, physical, and pathogenic properties of the three main types of tubercle bacillus. Dr. K. Birkhaug was formerly associate professor of medical bacteriology at the University of Rochester school of medicine, and has for the past three years been a member of the Paris Institute. In each of the nine strains investigated, Dr. Birkhaug found on culture three different kinds of colony: "R" (rough), "S" (smooth) and "Ch" (chromogenic), using the Petroff nomenclature. By means of single-cell cultures he shows that each of these three dominant varieties of colony is interconvertible in vivo as well as in vitro and that none of them possesses invariable characteristics, whether physiological, biochemical, physical, or pathogenic. The "Ch" and "S" varieties of both avian and mammalian tubercle bacilli, however, differ essentially from the "R" variety in their "diphasic" development in liquid synthetic media containing glycerin; this is characterised by an initial diffuse growth throughout the medium, in the manner of *B. coli*, with a clarification of the liquid in the course of one week and the formation of a flat and creamy surface film—in striking contrast with the "R" variety, which presents a "monophasic" surface growth only. Similar differences exist in the pH curves in liquid media inoculated with the three varieties of colonies, the mammalian "S" and "Ch" varieties producing an acid reaction in the course of eight weeks, and the "R" variety a neutral or alkaline reaction. With the avian "S" and "Ch" varieties an alkaline reaction curve is produced, while the avian "R" variety acidifies the medium. The electrophoretic mobilities of the "S" and "Ch" varieties, both of avian and mammalian origin, are definitely slower and more uniform, irrespective of age of culture, than those of the "R" variety which are nearly twice as rapid and variable with the age of the culture. Differences also exist between the three varieties in agglutination by acid, in resistance to heat, disinfectants, dyes, light, age, and unfavourable nutritive conditions. But the chief interest lies in Dr. Birkhaug's conclusions on the pathogenicity of these varieties of bacilli. The "Ch" variety, irrespective of its origin, is avirulent for the laboratory animals. The avian "S" variety is exceedingly virulent for the hen and rabbit, while the "R" avian variety is relatively avirulent for these animals. The mammalian "S" variety is relatively virulent for the rabbit, guinea-pig, and hen, injected intravenously or intraperitoneally; with passage the virulence is rapidly lost. On the other hand, the mammalian "R" variety is dominantly virulent for the laboratory animals, producing progressive and generalised tuberculosis, the human "R" variety only in the rabbit, the bovine "R" variety both in the guinea-pig and the rabbit. The "R" variety of the Calmette-Guérin bacillus (B C G) is relatively avirulent for laboratory animals, unless excessively large doses (10–50 mg.) are injected, intravenously or intraperitoneally, when typical tubercles result showing a tendency to caseation and early absorption. The "S" variety of B C G has shown an initial relative virulence in the rabbit and guinea-pig in doses of 1–10 mg. of the first and second passage cultures. The same doses injected subcutaneously produce localised caseous spots which always heal by ulceration or calcification. This virulence of the "S" variety is manifest only with intravenous or intraperitoneal injection. Miliary tubercles are produced in the lungs, liver, spleen, and occasionally in the kidneys and joints. After two passages cultures of the "S" variety rapidly lost their initial virulence, and during 31 bi-weekly passages on artificial media the "S" variety remained constantly avirulent for laboratory animals. Whether or not the "R" and "S" varieties of the B C G will always remain relatively avirulent Dr. Birkhaug admits is beyond current prophecy.

THE NORMAL HAND

THE hunt for the "normal" is pursued in diverse ways by many people, who find a common difficulty in providing a definition of the term. Since it is essentially a question of fixing arbitrary standards of limits of variation, and gathering within these limits a large number of individuals, it is not surprising that the results of different observers do not agree in every particular. Nor does it matter overmuch. Anormality in this sense is only a record of the greater frequency of the character in question among the individuals investigated. Prof. F. Siegert has chosen his material very carefully in his "Atlas der Normalen Ossifikation der Menschlichen Hand."[1] He has eliminated pathological influences, has examined histories, and has taken into consideration height and weight with reference to age. He has, in fact, taken only the best in all these sub-classes, and has made from them a group which he claims, with apparent justice, to be worthy of the term "normal." If the physiological processes are here shown to go on within narrower limits than is commonly thought, this is because

[1] Leipzig: Georg Thieme. Pp. 36. M.16.

to be of any practical value a rule must be definite enough to allow of measurement of variations from it. Probably if similarly well-grouped observations are made in this country it will be found that there are certain points of difference, but this possibility does not lessen the value of the records which we owe to the author of this work. Thirty-six plates of photographs, covering 150 children of both sexes (contrasted), go with the book as illustration of the material. It provides a definite standard for which, whether or not it will be found to apply to us, Prof. Siegert deserves our appreciative thanks.

ANOTHER MEDICAL VICE-CHANCELLOR

THE appointment of Mr. H. L. Eason as vice-chancellor of the University of London brings a medical man again to this high office after a period of 11 years. The last medical vice-chancellor was Sir Holburt Waring, whose tenure was between 1922 and 1924. Mr. Eason will bring to his duties an enthusiasm which has survived a vast experience in the public service—academic, medical, and social. At Guy's he has filled for 15 years a dual rôle, being a member of the honorary staff as ophthalmic surgeon, and also medical superintendent of the hospital. He is a representative of the University of London on the General Medical Council and its junior treasurer, and a representative of the Ministry of Health on the General Nursing Council. He is a coöpted member of the hospitals and medical services committee of the L.C.C., a member of the council of the British Hospitals Association, and a member of the general council and economy committee of the King Edward's Hospital Fund for London. He is also a member of the governing body of the British Postgraduate Medical School and of its school council. These are only some of his present activities. It would be difficult to enumerate the diverse committees on which he has served in the past, and impossible to over-estimate the value of his judgment in expediting non-controversial business and of his acumen in defining crisply the important issues. Mr. Eason has represented the medical faculty on the senate of the University for a quarter of a century, and has been a regular attendant at its meetings except for the four years of his war service as consulting ophthalmic surgeon to the forces in the Mediterranean and Egypt. It is thus a trusted friend and a wise counsellor who has been elected, and it is pleasant to think that his term of office will coincide with the centenary of the foundation of the University in 1936 and with its installation in a permanent home.

MANUAL REMOVAL OF THE PLACENTA

FROM the opening of the department of obstetrics at the Johns Hopkins Hospital in 1896 to June, 1933, there were 186 cases in which manual removal of the placenta was performed following delivery of a viable child. C. H. Peckham [1] states in a statistical survey of these cases that the incidence of the operation worked out at 1 in 120 patients, which compares with 1 in 312 (B. C. Hirst, 1918), and 1 in 110 (H. Montag, 1926). Most of the patients who had to have their placentas removed manually were multiparæ, and the incidence was highest among those whose labour had been prolonged as a result of sluggish uterine contractions. Premature labour also appeared to conduce to an abnormally adherent placenta. In 67 of the patients there had been spontaneous delivery, manual removal of the placenta being the only manipulation. Of these as many as 32 (48 per cent.) developed a puerperal infection and 7 died. These figures are more depressing as regards infection even than those published by A. Bourne (1921) or H. Baumm (1921) each of whom found an incidence of sepsis to be about 35 per cent. Peckham notes that manual removal has been less frequently performed at the Johns Hopkins during the later years of the period under review and ascribes this in part to a more real appreciation of the dangers attendant upon it. Of the indications for manual removal, hæmorrhage is the most obvious; mere retention of a placenta in utero, in the absence of hæmorrhage, should not be regarded as a condition demanding interference for at least two hours after delivery. By his emphasis on the danger associated with an intra-uterine manipulation which in itself may be a very simple one Peckham has shown once again the need of a searching inquiry into the factors that govern defective contractions of the uterine muscle.

[1] Bull. Johns Hopkins Hosp., April, 1935, p. 224.

JULES GONIN

THE announcement of the death at Lausanne of Prof. Jules Gonin at the early age of 64 is a reminder how recent is the modern treatment of detachment of the retina. Until 1930, when Gonin was invited to read a paper at the Oxford Ophthalmological Congress, his name was scarcely known in this country and his operation had only been performed by a few enterprising surgeons at Moorfields or elsewhere. Now his name is known to everyone, and although the particular technique that he advocated, and himself continued to practise, has been to a large extent superseded by newer and—according to the experience of most English operators—improved methods, his main contention, that the secret of successful treatment lies in sealing up the communication between the vitreous chamber and the subretinal space, remains unshaken. Gonin's operation or one or other of its modifications is now part of the ophthalmic surgeon's equipment, to the great benefit of most sufferers from the malady whose symptoms are at all recent. The results of treatment in retinal detachment of various types are to be discussed at the coming Oxford Congress in July. Gonin, although preferring his own technique, was by no means blind to the possibility of improvements; this comes out clearly enough in a monograph reviewed in these columns a few weeks ago (Jan. 19th, p. 154). There will be general regret that this congress must forgo his presence and the benefit of his ripe experience.

THE NEW WESTMINSTER HOSPITAL

ON Wednesday next, June 26th, the Prince of Wales will lay the foundation-stone of the new Westminster Hospital which is to be erected on two sites east and west of St. John's-gardens on the south side of Horseferry-road, not far from Lambeth Bridge. On the west side of the gardens will be the nurses' home and the medical school; on the east side the hospital proper. A beginning is to be made with the nurses' home which it is hoped to have ready for occupation next year, after which the building of the main hospital will be begun. The home is to accommodate 40 sisters, 200 nurses, 50 cooks, and maids; many of these will have had a say in its equipment, as for months past sample rooms have been on view at British Industries House where visitors have responded freely to the invitation to make suggestions in the books provided. Besides the living rooms the home will include a training school

with lecture rooms, a model ward with dummy figures for testing probationers, a sun-roof for recreation, and what is promised to be the best dance floor in Westminster. Last but not least there will be ample storage room so that boxes and trunks will be eliminated from the bedrooms. Messrs. Adams, Holden, and Pearson are the architects. For the work of superintending the rebuilding, which will go on for at least four years before the whole of the hospital and its activities can be transferred to the new site, the present secretary of the hospital, Mr. Charles M. Power, has been relieved of his other duties.

CANCER OF GENITO-URINARY TRACT

THE treatment of malignant disease of the genito-urinary tract is dealt with in several papers in the *American Journal of Surgery*, and they form a symposium on the subject.[1] A. Hyman prefers the suprapubic to the cystoscopic approach when implanting radon seeds into bladder growths: his reasons are, first, that it is difficult to ascertain by cystoscopy the exact extent and character of the neoplasm; secondly, that the degree of infiltration of the bladder wall can be definitely determined only by a suprapubic approach; and thirdly, that accurate disposition of the radon seeds is best achieved by open operation. The most important detail in the actual insertion of the seeds is the use of many introducers, so that those first implanted may be left in situ until the others have been put in. This makes it possible to cover the whole field accurately, whereas if the needles are removed as soon as the seed is introduced one cannot be sure that radon is distributed over the whole area. Special precautions are taken to avoid implantation of detached fragments of growth; thus the bladder is washed out with 50 per cent. alcohol and the cystotomy wound is seared with an endotherm electrode before inserting the sutures. When the growths are widespread and the patient's general condition satisfactory enough to allow of a serious operation, total cystectomy with implantation of the ureters is recommended. Hyman prefers cutaneous ureterostomy to sigmoidal transplantation because it is a less severe operation and can be carried out at the same time as the cystectomy. Considering how appalling is the fate of the sufferer from extensive malignant disease of the bladder, his results must be considered extremely good. In 19 cases in which total cystectomy with cutaneous ureterostomy was performed there was an operation mortality of 21 per cent. Only 6 of the 15 survivors were operated on sufficiently long ago to provide significant evidence, but 5 of these were still alive after 5–8 years. Complementary to Hyman's paper is one in which B. S. Barringer gives notes of 36 patients with carcinoma of the bladder treated by cystoscopic application of radium who have been under observation for periods ranging from one to twenty years. Among them 27 were treated by cystoscopic application only while 5 had previously had suprapubic implantation, followed by recurrence; 2 were secondary to cervical carcinoma. The treatment carried no operative mortality, and in Barringer's opinion, provided the seeds are properly placed, there need be no danger of penetrating the bladder with a radon-bearing needle.

H. H. Young treats of the radical cure of cancer of the prostate by means of an extensive excision from the perineum. Since the technique of perineal prostatectomy is well known, the main interest lies in the results, and L. G. Lewis reports that of 50 patients who survived the operation 33 remained alive for five years or more, while 23 are still living without recurrence. The conclusion is drawn that all suspect prostates should be removed immediately, and if such good results can be got in the comparatively late stages of the disease, those to be expected with an early diagnosis should be still more gratifying. M. F. Campbell, writing on the surgical treatment of cancer of the penis, holds that when the growth is superficial—say, less than 2 cm. in diameter—and unassociated with metastases, a complete cure can be expected from irradiation alone. For larger growths, without involvement of the lymphatics, conservative amputation of the penis will be sufficient, but if the lymphatics are involved, a more extensive operation is needed. It should be remembered, however, that in at least half the cases in which the inguinal glands are felt to be enlarged, the enlargement is inflammatory and not due to the spread of malignant disease. F. Hinman, who describes the radical operation for teratoma of the testis, says that it was performed on 14 patients who gave no evidence of metastases, and 10 of them were still alive. At operation it was found that 7 of the 14 patients had involvement of the lymphatics, and 4 of these are alive fourteen years, four years, one year, and three months after operation.

Malignant disease of the kidney is reviewed by W. Walters and W. F. Braasch, and here again it is the result of operation that is chiefly of interest. Of 42 cases diagnosed as renal neoplasm at the Mayo Clinic in the past two years, 9 were regarded as inoperable, which suggests that about a quarter of growths of the kidney reach the surgeon too late. A more comprehensive study of post-operative results was made in 1933, when it was found that between the years 1901 and 1927, 256 renal growths had been treated by nephrectomy. Out of the 256 patients 110 lived five years or more after the operation; 22 lived ten years or more, 15 between fifteen and twenty years, and 5 more than twenty.

[1] Amer. Jour. Surg., April, 1935, pp. 5–59.

RELAPSING FEVER

THE importance of relapsing fever, both from an epidemiological and from an experimental point of view, is emphasised by Prof. Hindle's valuable digest of 168 recent publications on the subject.[1] The disease is one which has long disappeared from the British Isles, together with typhus, and since the late war it has steadily declined in Europe as a whole, though endemic foci still persist in Russia. On the other hand, an extensive and deadly epidemic of louse-borne relapsing fever has swept across equatorial Africa, starting from Upper Guinea about 1921. In the French Sudan and Nigeria the number of deaths caused during the first two years of this epidemic is estimated at 80,000 to 100,000; in north equatorial Africa, where it persisted until 1929, about 10 per cent. of the population died of the disease; and in Darfur one district alone had 10,000 dead out of 45,000. The infection was probably introduced from the Mediterranean region by Moroccan and Algerian soldiers, and the outbreak provides a striking example of the lethal potentialities of a disease which usually has a comparatively low mortality.

From time to time sporadic cases of what was evidently a tick-borne relapsing fever have been recorded from various parts of the southern United States, and recently it has been shown that in Texas *Ornithodorus turicata*, a tick found in caves and similar localities, is responsible for the transmission. As demonstrated by Nicolle and his colleagues in the case of North African relapsing fevers, wild rodents

[1] Hindle, E.: Trop. Dis. Bull., May, 1935, p. 309

may harbour the infection, and as a general rule the spirochætes are maintained principally in this rodent population, though they are often capable of infecting other vertebrate hosts, including man. Study of the spread of relapsing fevers in many parts of the world shows that with few exceptions all varieties are transmitted either by lice, or by ticks belonging to the genus ornithodorus. The most notable exceptions are the occasional transmission of Spanish-African relapsing fever by a dog tick, *Rhipicephalus sanguineus*, and the possible rôle of *Dermacentor andersoni* in the spread of relapsing fever in British Columbia. In addition, the bed-bug is found to be a more favourable host than was previously suspected, and in rare instances spirochætes may persist indefinitely in the hæmocele of bugs that have fed on infected blood; but epidemiological evidence does not support the view that they are of any importance in carrying the disease.

The study of chemotherapeutic agents against spirochætal infections has been greatly facilitated by the use of animals infected with various strains of relapsing fever. The method of administration is shown to be of importance, for irregular doses of neoarsphenamine (N.A.B.) may merely prolong the apyretic period without appreciably alleviating symptoms. Exposure to ultra-violet rays, or raising the body temperature, are both found to increase the efficacy of salvarsan compounds very considerably, especially in their effects on residual brain infections. Further, an interesting new method of studying chemotherapy is introduced by the chemical analysis of the mineral content of the spirochætes before and after treatment with organic arsenical or gold preparations. The results of these analyses suggest that the chemotherapeutic agent unites directly with the spirochætes, and that changes in this adsorbed substance bring about the formation of an actual poison, which acts on the parasite; but the cure is completed by the immune substances of the host.

ACCLIMATISATION TO GREAT ALTITUDES

THE preparations now in progress for a fifth attempt to climb Mount Everest in the summer of 1936 lend a topical interest to two recent contributions to the physiology of great altitudes. Dr. Argyll Campbell [1] brings forward evidence suggesting that the limit of acclimatisation may be reached at an unexpectedly low height. He has previously shown that (in the conditions of the experiment) rabbits and mice appear to have greater powers of resistance to low oxygen pressure for prolonged periods than has man—i.e., that they are more capable of maintaining normal appetite, health, vigour, metabolism, and body-weight. In the present paper he examines the behaviour of these animals in an atmosphere of 10 per cent. of oxygen, corresponding to an altitude of 20,000 feet, and shows that even after attaining good acclimatisation at a pressure of 12 per cent. they could not be brought to withstand the strain of life at a pressure of 10 per cent. of oxygen. Campbell quotes the observations made on Mount Everest in 1933 by Raymond Greene in support of his laboratory findings, but in applying his results in practice it must be remembered that, as he himself has pointed out, there are great individual variations in the resistance of animals to low oxygen pressure; and that, as Greene has observed, many factors besides mere oxygen shortage may enter into the consideration of human deterioration. The practical lesson of Campbell's work is this: that Everest teams should spend the maximum available time in acclimatisation below the North Col and the minimum possible time on the upper part of the mountain, and that the decision of the 1933 expedition to take oxygen in spite of much opposition to its use was a wise precaution.

A paper by Childs, Hamlin, and Yandell Henderson [2] raises the question of the possible usefulness of carbon dioxide to climbers at great altitudes. Insufficiency of oxygen often produces a period of overbreathing so excessive that carbon dioxide is washed out of the blood and a period of apnœa follows. The second period may be terminated naturally by the reinforcement of the mounting carbon dioxide by oxygen deficiency, or artificially by the inhalation of carbon dioxide from a cylinder. Experiments conducted on Pike's Peak by Childs and Hamlin seem to show that the breathing of 2–5 per cent. of carbon dioxide during exercise may have some slight effect in lessening the strain of climbing upon the heart and respiratory apparatus. The results of the experiments were not sufficiently definite, however, for important conclusions to be drawn. Moreover, Cheyne-Stokes respiration proves no serious handicap to carefully acclimatised mountaineers on the greater mountains. The experiment is worthy of repetition at greater altitudes, but is unlikely to be of assistance to the Everest expedition of 1936.

A MEETING of the subscribers to the Stanley Melville Memorial Fund will be held at the British Institute of Radiology, 32, Welbeck-street, London, W.1, on Thursday, Oct. 17th, at 4 P.M., to consider and decide the form the Memorial should take and the method of its administration. Friends of the late Stanley Melville are requested to send contributions before the date of the meeting to the General Secretary at the British Institute of Radiology.

Dr. Paul Dudley White, of Boston, U.S.A., will deliver the St. Cyres lecture of the National Hospital for Diseases of the Heart on Wednesday, July 10th, at 5 P.M., at the house of the Royal Society of Medicine. He will speak on congestion without myocardial failure, and members of the medical profession are invited to attend.

[1] Campbell, J. A.: Brit. Jour. Exper. Path., 1935, xvi., 39.

[2] Childs, S. B. Hamlin, H. Henderson, Y.: Nature. March 23, 1935.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—Dr. T. A. Ross, formerly medical director of the Cassel Hospital for Functional Nervous Disorders, will deliver the Morison lectures in the hall of the College (9, Queen-street, Edinburgh) at 5 P.M. on June 24th, 26th, and 28th. He will speak on the teaching of the neuroses to medical students.

INDUSTRIAL HEALTH EDUCATION SOCIETY.—A meeting of the Industrial Health Education Society was held at 29, Portman-square, W., when Lord Luke presided, and the Duke of Kent spoke warmly to the meeting in support of the work undertaken. He found in particular that health talks to unemployed workers and unemployed boys' training centres had given valuable information, and that altogether the assistance of the medical profession in giving information to industrial workers on the diseases to which they are liable was most valuable. Lord Horder, president of the society, pointed out that while the grosser forms of occupational diseases which were much in evidence 20 years ago did not form the subject of these discourses, the whole standard of health among workers had already risen.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LVII.—PROGNOSIS OF DIVERTICULITIS

DIVERTICULOSIS is the name given to the mere presence of diverticula in the colon, and it is only when inflammatory changes have supervened that the condition is termed diverticulitis. The diverticula are mostly situated in the sigmoid colon, and when inflammatory change occurs it does so almost invariably in this region, so that it is as a disease of the sigmoid colon that we shall discuss the condition here.

With the increase in the number of routine X ray examinations of the bowel, diverticula are discovered more and more frequently, and it is of importance in such cases to be able to foretell the likelihood or otherwise of the future development of inflammatory complications. When it is realised that some 10 per cent. of people over the age of 40 have diverticulosis of the colon, and that actual diverticulitis is comparatively rare, it becomes clear that the risk is not a great one; and even that risk can be minimised by dietary precautions and the avoidance both of constipation and of purges. H. K. Graham Hodgson (Brit. Med. Jour., 1931, i., 525) has pointed out that those cases in which the diverticula show in the X ray plate as having a translucent centre with an opaque periphery represent diverticula containing inspissated fæcal material round which the barium flows, and are the type most likely subsequently to become inflamed. Where diverticulosis of this type is found, it is essential to advise prophylactic measures in the form of a low residue diet, the avoidance of purgatives, and the exhibition of liquid paraffin both by the mouth and by the rectum, in order to avert the onset of diverticulitis.

TYPES OF DIVERTICULITIS

Cases of diverticulitis fall roughly into three categories distinguishable by their main symptoms as (1) the inflammatory, (2) the obstructive, and (3) the genito-urinary types, although it must be remembered that in all cases the lesion is of an inflammatory nature.

The *inflammatory* type is associated with a tumour in the left iliac fossa and with pyrexia, and its manifestations are similar to those of appendicitis only situated on the left side. Like appendicitis it is protean in type and extremely variable in gravity. In occasional cases the so-called "pistol-shot" perforation of a diverticulum, with resulting peritonitis may be the first manifestation, and in such a case—there being no time for the formation of protective adhesions—immediate operation is necessary, the prognosis depending directly on the time that has elapsed between the occurrence of the perforation and the institution of surgical measures to close it. The more usual condition, however, is the development of an elongated tender swelling in the left iliac fossa, associated with moderate pyrexia. The swelling varies greatly in size from the sausage-like tumour indicative of moderate pericolitis, to the large phlegmonous mass such as is not uncommonly found in relation to the appendix. In this type of diverticulitis medical treatment offers a good prognosis, but it must be persisted in until all tenderness and pyrexia have disappeared, and must be followed by careful prophylactic measures. If repeated attacks occur, which they frequently do, medical treatment is still the safest course, but if surgery is called for it must take the form of a colostomy, to be followed in suitable cases by excision when the acute condition has subsided. Some patients find themselves so free from symptoms after the first operation that they are willing to put up with the inconveniences of a permanent colostomy. Some cases, however, even when under treatment, develop to the formation of an abscess instead of undergoing retrogression, and in such the abscess must be drained. The important point is that on no account must radical surgery be attempted in the presence of acute inflammation, or fatal results are likely to follow.

The *obstructive* type of diverticulitis is frequently mistaken for carcinoma of the colon. Clinically it shows itself by gradually increasing constipation progressing to obstruction, associated with pain and tenderness in the left iliac fossa, pyrexia, and sometimes the presence of a tumour. The first essential in such a case is to relieve the obstruction by means of a colostomy, and if this is not unduly delayed it carries a minimal risk. At the same time it is usually possible to form an estimate of the feasibility or otherwise of the subsequent removal of the portion of bowel affected. It is not unknown in such cases for the diverticulitis to be mistaken for carcinoma at the operation, and many instances of alleged survival for many years after simple colostomy for supposed carcinoma are examples of this mistake. When resection appears feasible it is important to allow adequate time after the colostomy for subsidence of inflammation, and this can be greatly helped by repeated low pressure lavage of the affected bowel. There can be no doubt that for the actual excision an operation of the Paul-Mikulicz type is the safest. The area of bowel is mobilised with the utmost gentleness and is brought outside the abdomen. The afferent and efferent loops are sewn together for 3 in., and the diseased part of the bowel is cut off with a diathermy knife. The continuity of the bowel is restored later by gradual crushing of the spur between the afferent and efferent loops, and finally the small opening which is left, together with the original colostomy, can be closed. This operation because of its many stages is irksome to the patient, but it more than compensates in safety for its other drawbacks. The temptation of inexperience is to perform a primary excision and suture, but in diverticulitis such an operation carries a very considerable mortality and is only to be undertaken in the most unusual circumstances of extreme localisation of the disease and free mobility of the bowel on either side of it.

The *genito-urinary* type is the uncommon variety of diverticulitis associated with a vesico-colic fistula. Here the severity of the resultant cystitis as a rule overshadows the bowel trouble. The condition is commonly diagnosed as a malignant one, whereas in fact diverticulitis is a commoner cause of vesico-colic fistula than is carcinoma. The prognosis in such cases is always grave, and unless the cystitis is speedily relieved renal infection and death frequently follow. A colostomy with spur formation, so that none of the intestinal contents reach the fistula, is the first essential, and when that has been done, careful washing out of the lower bowel segment will diminish the severity of the cystitis. At a

subsequent operation the bowel is separated from the bladder and the opening into this organ pared and inverted. The treatment of the colon will vary. Occasionally excision and union over a tube is possible, but usually after excision the upper end of the lower segment must be closed, and the patient will have to pay the price of a permanent colostomy for relief from the symptoms and dangers of his fistula.

RELATION TO CARCINOMA

Much discussion has centred round the question of the liability of diverticulitis to become malignant, and were the existence of such a risk established it would be inadvisable to persist with medical treatment. There is, however, little doubt that the patient with diverticulitis is no more liable to the development of carcinoma than is any other person, and fear of its occurrence need not in any way influence treatment. It is true that many cases are diagnosed as diverticulitis which are in fact carcinoma and vice versa. It is also clear that carcinoma, considering its frequency, must and does occasionally arise in a colon the subject of diverticulosis; but clinical experience, and the work of E. S. Judd and L. W. Pollock on specimens, both point to the conclusion that diverticulitis is in no sense a precursor of carcinoma.

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SPECIAL ARTICLES

THE APPRAISEMENT OF HOOKWORM-KILLING DRUGS

BY CLAYTON LANE, M.D. Lond.
LIEUT.-COLONEL, INDIAN MEDICAL SERVICE (RETD.)

"To ignore the past is to forfeit experience; to ignore the present is to make default to the future. . . . The new is not always true, nor is what is out of fashion always false."—(B. H. STREETER.)

To the query, "What drug best kills hookworms?" no reply can be given without first answering certain preliminary questions.

Should Deworming be Complete?

This question gets very different answers. In spite of emphatic disagreement, Garrison (1934)* maintained that cure meant complete deworming. Was he right? Or is there a worm-load proved to be negligible to host and to community? If so, how can it be determined? As to the host, Smillie and Augustine affirmed (December, 1925) that persons harbouring less than 100 necators need no treatment, but very shortly (January, 1926) they reduced this figure to 25. Neither conclusion emerges from their published facts (Lane, 1932), nor could the diagnostic means they used detect the lightly infected. No valid evidence has ever been produced of any such dividing line at any level.

For instance, Yenikomshian and Berberian (1932) retrieved 8 ancylostomes, with dramatic recovery of a gravely ill girl; and Ashford, Payne, and Payne (1933) retrieved 7 ancylostomes only from a markedly anæmic case, their accurate investigations yielding young worms 1·8 mm. long. If, as suggested, ancylostomes are twice as harmful as necators, grave illness could be caused by 14 necators, and if a dividing line exists between sick and carriers it must be much lower.

Pending the defining of such, the hosts' interest demands complete deworming.

As to the community, Molloy (1933) compared fæcal egg counts of 1455 persons before treatment, after one treatment with hexylresorcinol, and after two, and concluded that one treatment so lessened the hookworm load that it relieved most symptoms but did not eliminate all infective risk; accordingly a second seemed indicated, which might be by hexylresorcinol unless something better were preferred. The natural and apparently intended implication is that two treatments eliminate hygienic risk; but of the 618 persons who had two treatments with hexylresorcinol, over 500 remained infected; and taking a formed stool as averaging 100 g. this small group of presumably non-infective persons was actually passing at least 1,363,350,000 hookworm eggs *every day*. His paper was read at a joint session of the section of public health of the Southern Medical Society and the American Society of Tropical Medicine, and this unqualified advice passed without reported comment. To this hygienic position the policy of leaving a deliberate worm load has led. Such deliberate leaving in the individual of this or any other arbitrarily selected residual worm load is clearly opposed to the interests of both community and individual. Accordingly anthelminthic treatment should, as Garrison holds, aim at complete deworming. Whether it may rightly be pushed to this end is considered below.

Do Egg Counts Measure Worm Loads?

But while refusing to accept the conclusion just reached, some think that worm loads can be measured by fæcal egg counts. The evidence on the matter has been collected and arranged (Lane, 1932) with the conclusion that emphatically they cannot, either because corrections to the crude figures are necessary, or because they are actually being advised and used when they are not needed.

In the latter category lies consistence of stool. In the former lie age of worms, as Looss showed thirty years ago; their species, since *A. duodenale* perhaps lays eggs twice as quickly as *N. americanus*; interference by anthelminthics with oviposition, which caused Maplestone and Mukerji (1933) to reject egg counts in estimating the decrease in worm loads so produced in their hospital cases; weight of infection, as was first pointed out by Hill (1925)†; the presence of a second helminthic infection, which as Chandler (1932) showed may in the rat reduce to one-tenth the egg output of an existing one, peremptory disregard of a like happening in man being inadmissible; and diet, Foster and Cort (1932) reporting that in the dog it altered the egg count 1000 per cent., Looss having reported an opposite effect for man twenty years earlier.

Accumulating evidence does then but add strength to my conclusions (1932), "It is not possible from egg counts, however exactly made, to deduce with any approach to accuracy the number of worms which a person harbours." It was by inferring worm loads from egg counts that Smillie and Augustine based their conclusions above noted. Yet in discussing Molloy's paper (1933), Cort stated that egg counting was the only method usable under field conditions

* At the section of public health of the twenty-seventh annual meeting of the Southern Medical Association of the U.S.A.

† It is pleasant to make a correction here. Having overlooked Hill's conclusion to this effect, and having read Sarles subsequent demonstration (1929) of this fact in dogs, I turned naturally to Hill's fully documented paper for confirmation, and independently worked out, and reported, the point from his tables. It was only on re-reading the paper months later that I realised that he had already made it in his conclusions.

with groups of any size to test the reduction in worm burden produced by treatment. That is not so. Thus in commenting on Sweet's (1929) great work on 32,507 fæcal examinations in Ceylon, I have noted (1932) that with regard to hookworm infection the eight provinces with a single exception lay in the same order whether this was discovered by the tedious process of egg counting, or by the old and quicker one of noting the percentage of positives which one and the same diagnostic technique displayed. Which alternative is nearer reality? In fact, reduction of infectivity produced by massive treatment may be graded easily and rapidly by the growing number of negatives to a dependable diagnostic technique. Egg counts do not measure worm loads, and there are simpler, cheaper, and quicker ways of estimating hygienic risk.

Do Egg Counts Measure Fæcal Egg Content?

Different egg-counting techniques differ sharply in the number of eggs which they disclose from the same fæcal base, and they cannot all be right.

Dilution techniques disintegrate fæces in some liquid. Water was used by Lutz and Leichtenstern in 1885 to determine worm-egg ratios, and led Looss, in 1897, directly to his great discovery of the skin route for hookworm infection. Stoll (1923) used decinormal sodium hydroxide solution, but has never offered any evidence that it is better than water; it dissolves albumin and chitinoid, of which the egg and its shell are composed, and it readily produces clumping of a fæcal suspension with uneven distribution of its constituents. Independent reports have not established the method's claim to accuracy. In my own hands it has proved the most erratic dilution egg counting technique tested. Ahmann and Bristol (1933) found that in their's it gave consistent counts only after a training period covering 50 slides and even then only when an average was struck of four or more counts from the same suspension, a precaution perhaps never yet adopted. A half-saturated solution of common salt (Control E., Lane, 1924) with a specific gravity evidently near that of hookworm eggs, has given me evener and higher average counts than any other dilution technique, and merits independent tests. By means of rising air bubbles the dilution-floatation technique of the Caldwells (1926) mixes fæces with a sugar and antiformin solution having a specific gravity of near 1200. The known forces at work seem predominantly lifting ones. I have been unable to get satisfactorily even results with it.

D.C.F.F.‡ (Lane, 1924, 1932) has given me the evenest and highest average counts of any technique, but to obtain them instructions must be carried out. Particularly fæces must be completely disintegrated, and concentration must not be too great.

In improvised apparatus Hung (1926) exceeded the limit of effective concentration and obtained poor results. Stoll and Hausheer (1926), and Hausheer, Herrick, and Pearse (1926), altered the technique by deliberate rejection of the advised disintegrator (which comparative egg-counting tests have shown to be the best), by picking off floating debris after centrifuging (that is to say after eggs have become forcibly concentrated and entangled in them in numbers) and not before centrifuging as was advised (because counts have shown that nothing of the kind occurs then), and by rejection of instructions to scatter an uncountable herd of eggs and to use a square field for counting. They altered the technique in essentials, they obtained counts, poor and some of them typical of undisintegrated fæces, they transferred the discredit to the original technique, and they failed to repeat the experiments or to issue any modification of opinion after these serious changes had been pointed out; their conclusions have had wide acceptance. Soper too (1926) reported badly on D.C.F.F., but his success in adding to egg collection by stirring the sediment between spins is clear evidence of failure to produce complete disintegration.

No tests have disturbed the evidence that D.C.F.F., properly carried out, is at present the most accurate egg-counting technique. It has been controlled as follows:—

The ovum content of a fæcal sample has been determined by D.C.F.F., a known quantity has been cultured, and the number of infective larvæ recovered by extraction and by trapping counted. Trapping is essential, for many, sometimes all, larvæ may migrate from a culture before it is extracted (Lane, 1928, 1932) and unless the trap is so situated as to intercept them at once, they may dry up before reaching it, so that the total number retrieved may form no check on the number of eggs in the culture. Indeed in infection with the related œsophagostomum of sheep, Veglia (1928) relied entirely on emigration in determining whether or not the sheep host was clean; moreover cultures must be extracted between about seven and ten days of being set, since after that interval larval numbers are apt to lessen, evidently by death. Of 149 cultures kept at 28° C., and trapped, and extracted within that time, 5 showed more larvæ than were accounted for by the eggs delivered by D.C.F.F., the percentage increases in order of time being 17, 5, 4, 1 and 0·1. The first factor concerned in this steady diminution was skill in recognising, by appearance and movement under a 2 in. objective, free-living larvæ among swarms of hookworm larvæ; the second was the evolution of a drying technique which freed the culture earth from free-living nematodes, none being found in the last 280 cultures set, some of which had stood for weeks.

The reasonable conclusion from these controls is that D.C.F.F., properly used, is the most accurate egg-counting method, that egg counts made by it measure egg content, and that it constitutes a safe means of determining what diagnostic technique is the best.

What Diagnostic Technique is the Best?

Smears will unquestionably disclose every infection if sufficient area of sufficiently dilute fæcal suspension is sufficiently carefully examined, and twenty years ago smears were being used with that very aim, but were so time-consuming that concentrative techniques came into being. But these diagnostic qualitative techniques vary more in accuracy than do egg-counting quantitative ones. They can be accurately evaluated by egg counts only; and it is through D.C.F.F. that D.C.F. has been shown to be the best diagnostic technique at present available (Lane, 1932), and to be capable of disclosing a single normally ovipositing hookworm.

A normal female necator lays sufficient eggs daily to provide 28 to 45 of them in each gramme of fæces, a female *Ancylostoma duodenale* perhaps twice as many; D.C.F. uses 1 g. of fæces; in normal fæces it displays not less than 60 per cent. of them, so will disclose such a solitary female, a thing which no other technique can be depended on to do. Obviously one which uses 1/200 g. of fæces will miss such a necator infection some nine times out of ten. Further, Maplestone (1933) showed that short-lived infections with *A. braziliense* are readily acquired, D.C.F. displaying 3 to 4 eggs to a preparation, and expressed his belief that he would have missed these deliberately induced and closely watched-for infections had he used any other diagnostic technique. Eggs displayed by D.C.F. can with great ease be collected into a central herd, whose size or density may be used for grading egg numbers on a mass scale as satisfactorily as syphilitic infections are graded by the Wassermann reaction every day in laboratories all over the world. A combination of negative results with such an estimate of the size and density of the herd in positive cases will allow the effects of treatment to be satisfactorily checked, and since D.C.F. can be carried out at the rate of a quarter of a million examinations yearly by 4 men using a twelve-tube centrifuge, the matter is pre-eminently one of practical hygiene. When all these points have been realised, the

‡ D.C.F. or direct centrifugal floatation is a qualitative (yes or no) diagnostic technique which examines a single specimen obtained by a single centrifuging. D.C.F.F. or direct centrifugal floatation pushed to finality, is a quantitative technique, aiming at disclosing the total number of eggs present by examining 4 (plus 1) specimens from 4 (plus 1) centrifugings.

waste of time and money entailed by egg counts, made as measures of worm loads, is unlikely to continue in public health practice.

Conclusions as to Methods of Appraisement

The value of egg counts as a measure of worm loads is illusory, and as a measure of fæcal egg content depends on the method used; evidence for complete deworming is the only stable criterion of drug efficiency; fæcal worm search to determine this is tedious, unpleasant, and not always evidence of worm loads; though smears, adequately and laboriously used, presumably effect this, D.C.F. is the only concentrative technique which will rapidly and certainly detect every normally ovipositing fertile female hookworm (every infection of present hygienic risk), and it will do so at the rate of a quarter of a million examinations a year with one team of four men and one centrifuge; hygienic risk caused by infected persons can be graded rapidly, usefully, and empirically by estimating the size and density of the herd of eggs which that technique displays; and the lessening of hygienic risk produced by mass treatment is the proper and adequate measure of the success of such treatment.

What Drug Best Kills Hookworms?

When these conclusions are applied to hookworm-killing drugs, satisfying appraisement is found to be impossible, seeing that observations on different drugs have been made by methods too various to be comparable, and that for twenty years test by deworming has been neglected.

The problem has two parts—efficiency and safety. With no exception at all *safety must come first*, for the infection is in man and it rarely kills directly. Moreover, success and safety achieved in an institution need not be repeated among millions of infected persons in the field, nor can they be looked for unless the drug has a definite composition.

Oil of chenopodium has no such stability. When in greatest vogue its active principle, ascaridole, was still undetermined. This is deadly to man and worm, the respective lethal doses lie near one another, and its reported percentage in the oil has varied from 33 to 98. Further, the size of drops varies with different droppers, and there has been catastrophic confusion between 45 drops on the International Dropper (or 1·2 c.cm.) and 45 minims (or 3 c.cm.). Numerous deaths have followed the latter, apparently none the former, which at a percentage of 66 implies 0·8 c.cm. of ascaridole. To give the oil without knowledge of its ascaridole content is indefensible—but customary. Many tens of thousands of doses have been reported, in few has its ascaridole content been known, and in none of these has deworming been the method of measurement. In other words, I find no acceptable published evidence of its efficiency against hookworms.

The other drugs much used have definite chemical structures.

THYMOL

Thymol was in greatest use when prolonged examinations aimed at, and must often have succeeded in disclosing, deworming. For successful use it must be particulated. Thymol crystals readily set into a solid mass, so that when packed into a digestible capsule its shape may still be recognised in the now bare lump of wasted thymol passed in the fæces. Proper dispensing quite alters matters. B. E. Washburn and G. C. Payne showed in Trinidad nearly twenty years ago that when the drug was finely ground and then intimately mixed with at least an equal quantity of sugar of milk, deworming after two treatments increased from 12·6 per cent. to 49·1 per cent. Comparable results were reported from British Guiana and Ceylon. In all these cases post-treatment examination was so minute as to have been nearly or really accurate.

Giles (1890) held that particulation was best obtained by pouring an alcoholic solution into, say, eight times its volume of water and shaking.

The microscope then shows tiny globules of thymol-containing fluid moving about in the water. Their further behaviour varies. In a series of the writer's experiments at room temperature using a 50 per cent. solution in rectified spirit diluted and emulsified in this way, crystals began to form in two and a half to seven minutes on the surface of portions poured into open flat dishes, and in 30 minutes in those kept in closed flasks, the thymol-containing spirit having first collected into considerable globules on the surface. If Giles's observation on anthelminthic power was made on persons who received the drug as an emulsion, this presumably behaved in the stomach as in a closed flask, and absorption began from an alcoholic solution. But after forming, surface crystals are apt to grow rapidly into plates, far larger than the crystals of the drug as dispensed. Yet these crystals need not be allowed to form, for if initial shaking is so vigorous that the alcohol is rapidly diffused in the water, thymol forthwith precipitates out in fine, loose flocculi which do not afterwards aggregate into plates. The swallowing of the drug in a state of microscopic subdivision is, then, no guarantee that it remains so in the alimentary canal.

Several physical conditions may result when thymol solution is shaken up in water, and they are capable of influencing in several directions its absorption; for contrary to much teaching absorption should seemingly be one's aim. Thus Caius and Mhaskar (1919) showed that particulated thymol is completely absorbed, none being passed in fæces even when, with the drug, was given enough Epsom salts to produce purgation within 45 minutes. Two conclusions follow. Firstly, the fear that the taking of alcohol will, by its ready solvent action, produce too great absorption can hardly be correct. Secondly, since most of the absorbed thymol was not accounted for by the amount of its known derivatives in the urine, it must have been changed in the body into something else; quinine and emetine are so changed into active parasiticidal substances. Presumably (Lane, 1932) the actual vermicide after thymol is something else than thymol and is absorbed by hookworms from the blood, so that complete absorption should seemingly be our aim with thymol. Giles, a good observer, offered no figures in support of his view, and only extensive comparative tests can determine whether he was right, or alternatively to what degree of fineness crystals should be ground to give best results. On available evidence it may be concluded that two courses, each of 60 grains of "finely particulated" thymol, will effect deworming in about 50 per cent. of adults.

Moreover, such deworming is safe in those not already moribund or nearly so. I have reported (1932) all the deaths after thymol which I could collect. With but a single exception no two autopsies have shown the same lesions, the exception being two brothers who disappeared into the woods together for some two hours after a thymol administration and died of acute gastro-enteritis. It is not in accord with medical experience and usage to attribute to a drug lesions which have in all cases but one pair been different, and that pair having peculiar circumstances. Howard (1919) pointed out how persistently it was stated that sixty-grain adult doses of thymol were dangerous, but that there had actually been given over a million such doses in the United States with no death, and that few drugs could stand so severe a test. Last year I received a letter from the late Bailey K. Ashford

in which he refers to 1,600,000 doses given by him in Porto Rico without a death, and towards the end of last year I had another from a young and distinguished lay American helminthologist reiterating the legendary risks from thymol, but when details in substantiation were urgently requested, he let the matter drop. I believe there is no evidence. If it can be found it should, in the interest of human life, at once be displayed. Actually thymol is as safe as it is because, like alcohol, it is apt to produce early symptoms of intoxication, and the intoxicating dose is far removed from that which kills. The figures I have quoted show how much justification there is for this strangely persistent legend, and I think that few who repeat it have any adequate experience of the drug's use. The figures were obtained by disinterested persons whose experience of thymol is unrivalled; my own 60,000 administrations without anxiety are relatively unimportant, for as Ashford, Payne, and Payne write, "We must remember Maurice Hall's wise observation that the limitations of an anthelminthic can hardly be known save after a hundred thousand well-observed administrations."

Beta naphthol.—The minimum lethal dose is 20 grains (1·3 g.) (Milne, 1933), and lower doses are not efficient.

CARBON TETRACHLORIDE

The following few instances have been found in which evidence of deworming has been used to measure the efficacy of carbon tetrachloride.

Field (1924) gave 4 c.cm. and, checking results by six smears and three examinations by a floatation technique, obtained a cure percentage of 77. Maplestone and Mukerji (1929) gave 3 c.cm. to sixty hospital patients, and using D.C.F. obtained a cure percentage of 48, while the same dose combined with 1 c.cm. of oil of chenopodium of unstated ascaridole content gave 46·4 per cent. of cures in 69 cases. The minimum lethal dose is 1·5 c.cm.

As to safety there are two sets of reports.

On the one side is Lambert's assured call (1933). "I report more than 100,000 consecutive treatments with carbon tetrachloride without a death"; but he does not there mention that earlier he had had 42,500 cases without a death, and then 3 deaths in the next 8000—deaths which he attributed to impurities, although the lesions found were reported by Darling (Lambert, 1923) as "unquestionably caused by carbon tetrachloride." Again, Tomb and Helmy (1933) report that in 1,600,000 doses they had 19 deaths, 6 being immediate in twenty minutes to six hours, and 13 delayed for two or three days with typical lesions. In the same number of doses reported for thymol by Ashford there were no deaths. What advantage justified the use of a drug which caused those 19 deaths? None is offered. Khalil (in Hassan and Salah, 1935) reports that 7 to 8 cases of "carbon tetrachloride poisoning" are reported yearly by the Parquet in Egypt. On the other side are reported high mortality-rates (*v.* Lane, 1932), of which only three examples need be repeated: Ziya Bey (Hussameddin, 1931) 1 death in 1200 administrations with an adult dose of 2 c.cm., Nag (1929) 3 deaths in 289 children, the dose being 2 c.cm. for a child of eleven, and Straub (1925) 2 deaths in 400 Chinese and Klings, the men receiving 2·5 and 3 c.cm., respectively.

The drug holds a unique position. It causes definite lesions. Its minimum lethal dose accompanied by typical lesions is 1·5 c.cm. (Bais, 1924), and the dose given in the British Pharmacopœia is up to 4 mils.

Tomb and Helmy (1933) hold that since after large doses most of the drug is passed unchanged in the fæces, large are safer than small ones; an unacceptable conclusion, for the quantity absorbed and not that remaining unabsorbed must govern safety, and Robbins (1929) showed that the larger the dose the greater the absorption, and therefore surely the greater likelihood of that hepatic and renal damage that kills. Moreover, hepatic damage is greatest round the hepatic vein, regeneration taking place from cells surviving beside the portal vein; but in autopsies recorded by Ashford and King (1907) on established deaths from ankylostomiasis itself (no carbon tetrachloride having been given) fatty degeneration was always present, and was most marked about the portal vein. Hookworm infection itself then, as they report, injures just those areas from which hepatic regeneration must start if life is not to be lost from carbon tetrachloride poisoning. Again, a factor making for death from the drug is excess of guanidine in the blood, the antagonism between guanidine and calcium has been repeatedly demonstrated, while Ashford (1933) notes from long experimental work with Hernandez that nutritional unbalance itself produces calcium deficiency, and that it is precisely among such persons that antihookworm work has usually to be undertaken. The dangers of comcomitant ascaris infection are real.

Further, Soper, of the Rockefeller Foundation, reports (1935) on the anxiety felt since 1932 regarding recrudescence of yellow fever in South America, where over 50,000 liver specimens were examined. In a large series collected in Ecuador pathologists disagreed on the significance of the lesions, immunity tests in children were negative, no cases occurred in the cities, and the clinical histories of the dead were inconclusive. But these last had one common factor—all but one of them had received anthelminthic treatment before dying. On the numbers of these deaths, the drug or drugs used and their dosage the paper is unfortunately silent (doubtless full details of these are being made public); but J. W. Lindsay, of Paraguay, tells me that the ordinary mass treatment of hookworm infection in that country (carbon tetrachloride or oil of chenopodium, or both, in standard doses according to age, by native orderlies not always under professional control) has in some districts, among the underfed, calcium deficient population, been followed in children by deaths, and in adolescents and adults by ruined health with swollen liver and yellow-ochre jaundice.

The position is this. The use of carbon tetrachloride is strongly pressed on backward races in doses considerably greater than the minimum lethal dose; its deadliness depends on an individual variability in the patient; some of the factors in this variability are known; and no attempt is being reported in its massive use to determine whether such as are known are all absent in the treated, and often none to ascertain whether these are infected or not. Is not this rightly termed "herd treatment"? Is herd treatment justifiable for man?

TETRACHLORETHYLENE

The following instances have been found in which tetrachlorethylene has been tested by evidence for deworming:—

In doses of 3 c.cm. it was given by Maplestone and Mukerji (1929) to 40 patients, with a cure-rate to D.C.F. of 15 per cent.; and at the same time they reported a like cure-rate of 26·2 per cent. in 42 cases when 1 c.cm. of oil of chenopodium of unstated ascaridole content was added to the same dose of tetrachlorethylene. They repeated the latter test (1933) using 4 c.cm. of tetrachlorethylene and 1 c.cm. of oil of chenopodium of unstated ascaridole content, and obtained by D.C.F. in 50 cases 62 per cent. of cures in one treatment, and 74 per cent. in two. What caused the marked difference in the results of their two experiments is not clear; several factors varied, but that the better results are those which may be expected in future cannot be accepted without further investigation.

These writers advise that this mixture should be shaken into an emulsion with 2 oz. of saturated solution of magnesium sulphate, so that it may reach all worms in the intestine in this state of subdivision, with efficiency thereby increased. This advice can hardly be sound, for as to the chenopodium Darling, Barber, and Hacker (1920) reported better results when it was given as an oil than an emulsion, and as to tetrachlorethylene, my own experience is that, within ten seconds of ceasing to shake up 4 c.cm. of tetrachlorethylene in 2 oz. of magnesium sulphate solution, the former has again begun to collect at the bottom of the flask, and that nearly all of it has so separated

out in one minute. The chance of its reaching all the worms in the small intestine in a state of fine subdivision does not seem to be increased by the manipulation.

The dosage employed by Garrison (v. supra) for children of ten was 9 c.cm. in all, namely, 3 c.cm. weekly given on one morning in hourly doses of 1 c.cm. and followed by a purge, the child being kept in bed on the day of treatment. As to cure, a brine-floatation method showed 7 per cent. positive four months later. Garin, Rousset, and Gonthier (1933) gave 5 g. doses daily on three consecutive days, and obtained to a modified and unevaluated Telemann technique a cure-rate of 82·5 per cent. They compared it with thymol given in the same way in 3 g. doses, and which they held to be particulated by being finely ground and mixed with about a hundredth of the amount of magnesium carbonate necessary to produce particulation; its cure-rate to the same technique was 47 per cent. Their conclusions are not of comparative value, but are cited to emphasise how essential is attention to detail before fair comparisons can be made.

No death has been reported from tetrachlorethylene, though Kendrick (1929) had grave anxiety in one of 500 administrations after a dose of 3 c.cm. in a man weighing 100 lb. In a paper silent as to its anthelminthic effect, Lambert (1933) reports 46,000 treatments in the South Pacific without a death. Maplestone and Mukerji urge that, as was pointed out above for thymol, the symptoms may be compared with those of drunkenness. The drug merits massive, controlled, field investigations, but present claims to its pre-eminence are premature.

HEXYLRESORCINOL

No attempt has been traced at evaluation of hexylresorcinol through deworming. Molloy's cure-rate was clearly much less than the 19·4 per cent. claimed after two treatments as judged by Stoll's technique; for in 12 post-treatment cases this method disclosed to Maplestone and Mukerji (1929) four positives while D.C.F. displayed eleven. The drug has hitherto caused no deaths. Relative success depends on starvation, rigorous to a degree required for no other anthelminthic.

The many complaints of oral erosion when children bit the capsule induced, it is reported, its withdrawal by the makers from unrestricted purchase in the United States. In cats (Maplestone and Chopra, 1934) erosion of the gastric mucosa is histologically negligible in doses of 1 grain per kilogramme; but local action must depend on local concentration, and when this was produced by putting a big dose into a cat's small stomach there followed necrosis of the mucosa to half its depth. Similarly in a man with strongyloides infection it caused marked gastric irritation (without lessening of larval numbers passed in the fæces); accordingly these writers urge the need for careful selection of cases.

Encapsulation of the drug shifts to the invisible stomach the ugly necrosis it causes, but æsthetic gain need be no more than a decent shrouding of pathological damage. Hope of its usefulness on a mass scale is slight.

A COMPARATIVE TEST

Failing tests by deworming one must fall back on comparative tests in which control of single factors seems to have been attained. Only one such series has been discovered comprising three of the drugs. Caius and Mhaskar (1919, 1920, 1923), using the Schüffner-Vervoort method of trial and test drug with 60 grains of particulated thymol for the test treatment, got the following results with *A. duodenale* and *N. americanus*, respectively; particulated thymol 4 g. in one dose, 96·1 and 99·6; ascaridole 1 c.cm., 60·9 and 83·4; carbon tetrachloride, 1 c.cm., 11·5 and 90·8, 3 c.cm., 76·4 and 96·3.

General Conclusions

In my first section the conclusion was reached that deworming should be our clinical and hygienic aim, to which it is objected that to push a potentially lethal drug in an effort to attain this object, in an infection which itself rarely kills directly, is morally unjustifiable. But where is the evidence that thymol used with individual care is potentially lethal? Methods of drug appraisement have been summarised, with the conclusion that, from this point of view also, evidence for deworming should be their basis. Finally, the drugs have been so considered, and I have laid out all the evidence I have been able to find which fulfils the necessary conditions. It seems to leave thymol in the first place, especially when safety and efficiency are both considered, it being again stated emphatically that *safety must have the first place.*

It has been said that I have appeared as advocate in the case of thymol *v.* carbon tetrachloride, and have "perhaps unconsciously" weighted the evidence in favour of my client. Where human knowledge and human life are at stake, suggestions of such bias should be substantiated, but nothing of the kind has been attempted by that writer in the years that have since passed. Again, this conclusion of mine, based on published evidence (that properly administered thymol remains preferable to all the newer anthelminthics), has been designated as reactionary and prejudiced; but in this connexion it seems worthy of note that other conclusions of mine (dealing with the point reached by existing evidence on the mechanical basis of microfilarial periodicity) have been described as revolutionary. A sane person whose mind runs equally readily to revolution and reaction in kindred subjects must be somewhat of an oddity. Perhaps after all the appropriate adjective in both cases is rational.

The bulk of what has been offered as evidence for appraising hookworm-killing drugs has been reached in non-comparable ways. What is good I have attempted to sum up fairly. These conclusions are before a jury of medical men in private and public health practice, men fully competent to decide whether the evidence offered is or is not good. But in face of its meagreness the matter should not rest there. There is so much of human life and human happiness at stake that the immediate future should see a serious effort made, by unprejudiced and independent qualified medical workers, to add to acceptable and controlled evidence regarding the real value and safety of hookworm-killing drugs. If this paper does not initiate the collection of a sufficiency of such evidence by such men, it will have failed in its most important aim.

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ROYAL INSTITUTE OF PUBLIC HEALTH AND INSTITUTE OF HYGIENE

CONGRESS IN HARROGATE

A CONGRESS was held in Harrogate by the united Institutes commencing on Tuesday, June 4th, and concluding on Whitsun Sunday, June 9th. The congress met under the presidency of Lord Harewood, and its work was carried on under five sections: (1) State Medicine and Hygiene; (2) Women and Children and the Public Health; (3) Tuberculosis; (4) Rheumatism and Allied Diseases; and (5) Hydrology, Climatology, and Meteorology. The ground covered in the communications was extensive. These will be published, as far as possible in extenso, in various issues of the *Journal of State Medicine*. Certain of the debates which roused the principal interest in the different sections are here noted.

Dr. Johnstone Jervis, M.O.H. for Leeds, pointed to bad housing as still remaining the chief cause of tuberculosis. Dr. W. S. Gilmour, medical superintendent of the City of Leeds Sanatorium, said that tuberculosis accounted for about 50 per cent. of all the deaths in young women, and Dr. N. Tattersall pointed to the long hours of work in factories imposed upon girls who had only just left school. Compared with the strains of industrial life, he held the cocktail habit and other accompaniments of social life to count for little. Sir Pendrill Varrier-Jones said that despite all efforts tuberculosis succeeded in killing four or five times as many people as the motor-car. In his experience tuberculous people could do excellent work if given a chance to make good by employment. He asked whether it was not better to subsidise their industry than their enforced idleness when driven into the ranks of the unemployed.

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Dr. L. P. Lockhart, member of the Industrial Health Research Board, introduced an interesting debate on the position of the sexes in modern society. The welfare of women, he thought, would never be properly advanced until their supposed lack of mechanical ability and their supposed instinct for cooking and textile work were found to be inaccurate generalisations. Women, he said, need freedom, not to do as they like, but to assume their full share of responsibilities in industrial and economic life. The challenge was taken up by several speakers who pointed out, among other things, that too many women were found in offices and factories who would be far more efficient in discharging household tasks; that if a married woman entered the labour market she could not do her work at home properly; that it was degrading to see women engaged in industries once the stronghold of men; that properly cooked food from a communal kitchen was better than ill-cooked food from the domestic oven; and that when women entered industry they were used as a lever to pull down men's wages.

A debate on the need for the greater standardisation of food products produced some straight talking. Dr. King Brown, instancing sausages as a valuable article of diet whose contents varied so enormously that standardisation was required, urged that the public should be protected from misleading advertisements. In illustration of this Dr. H. M. Holt said that the public ate under the heading of confectionery things sold as cream buns which had no cream. Dr. Jervis held that food standardisation, if it raised the prices by safeguarding the value of the product bought, would save much expense later on in medical and hospital treatment. Dr. G. E. Oates, M.O.H. Paddington, criticised the working of the Milk Marketing Board, and Major D. S. Rabagliati urged that the producer should be encouraged to go in for tubercle-free milk.

Dr. Doris Odlum spoke of the necessity that teachers should be better fitted for their work by taking a course of psychology, believing that the average mother would accept guidance in bringing up her children if the educational system provided teachers who had had some appropriate training. She criticised also the children's courts, the presiding magistrates not having proper psychological equipment.

SPA TREATMENT

Dr. Alfred Cox, general secretary of the British Health Resorts Association, opened a discussion on spa treatment for industrial workers, pointing out that in Great Britain no use was made of the opportunities for the relief of disease provided by spas, while in France and Germany no place could be recognised as a spa unless it was prepared to treat a certain number of cases free and a large number at reduced rates. Many industrial workers, he said, were suffering from diseases which spas could best deal with, but the advantages of the British spa are too often not available for them.

In this section of the congress Dr. Howard Humphris read a paper in which he suggested that the known beneficial qualities of spa treatment are not in this country sufficiently related to the radium emanation contained in the waters. He held that in radium emanation taken at the source of origin the main secret of spa benefits could be found. "The secret of the spas," he said, "is identical to radium emanation," and he pointed to the excellent results of mild radium therapy, so that it was unfortunate that British spas should labour under the disadvantage

of not being able to supply mild radium therapy. The task of installing it in every spa could be accomplished with very little difficulty and expense by means of a specially constructed apparatus, the emanator, which he described.

An attractive handbook was published on the occasion of the congress, setting out the claims of Harrogate both as a medical centre and as a place of recreative sojourn. The compilers have realised that while the medicinal springs must be the main reason which attracts the public to the spa, the invalids are usually accompanied by relatives and friends, while both those who are sick and those who are whole require diversion. In this handbook Mr. S. P. B. Mais points out that Harrogate is the central point between London and Edinburgh, between John o' Groats and Land's End, and between the east and west coasts, and is a stepping-off place for those who wish to see England at its richest, historically, architecturally, and pictorially. Harrogate has received more than one description in these columns, and its scenic magnificence and efforts to provide amusement as well as "cures" are well known to most medical men. We may refer our readers to the account of a conference held there under the auspices of the British Health Resorts Association last year (THE LANCET, May 19th, 1934), as showing what advantages the spa can offer to the suitable patient.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY

ANNUAL GENERAL MEETING

THE annual general meeting of the society was held at Victory House, Leicester-square, London, W.C., on Wednesday, June 12th, 1935. The chair was taken during the first part of the proceedings by Dr. G. F. STEBBING, chairman of council, who said, in moving that the annual report, statement of accounts, and balance sheet be received and adopted, that the year had seen a large increase in the amount of work of the society, the applications from members for advice and assistance having risen in number from something like 1200 the year before to 1460 during the year under review. He added "there has been a considerable increase in the membership of the society; we have elected 984 new members during 1934. It is interesting to notice that on the average we have had an application for assistance from every ten of our members—in other words, 10 per cent. of our members have had occasion to turn to us during the year. The society has ample funds at its disposal, and has never hesitated to use them when the members' interests required it, and this year an amount actually in excess of the subscription revenue has been spent on behalf of the members." Dr. Stebbing then referred to the extremely varied nature of the work undertaken for the members, alluding specially to questions connected with National Health Insurance, as well as to the variety of troubles and accidents which might happen to the practitioner in the course of his duties, some of which might only incidentally relate to practice but nevertheless must greatly affect the welfare of the doctor. He pointed out that apart from legal defence and advice the society was able to help members on many matters which might seem scarcely to come within the strict scope of their business but where none the less guidance might benefit a member. He recalled the memories of Sir John Rose Bradford and Sir Thomas Parkinson in a few words, and closed by alluding to the necessity of an extraordinary general meeting to approve certain alterations in the Memorandum of Association.

Dr. R. L. GUTHRIE, the treasurer, pointed out that the balance sheet and accounts contained in the report required little explanation. He reminded the audience that the year 1934 could hardly be as prosperous pecuniarily speaking as its predecessor because a number of expenses and unsettled cases were outstanding at the end of 1933, so that but for a profit made by the sale of certain short-dated securities there would have been a small loss in 1934. Disclaiming the gift of prophecy, he said that the prospects this year looked better as the society had not so many expensive cases in hand. The capital position he pointed out was sound; all the investments were gilt-edged and appreciation of capital value had further increased. The policy of the society, however, had always been to keep the assets liquid and available for the benefit of members rather than to hoard up reserves, and in the year under review the analysis of expenditure showed that 16*s.* 3*d.* of a pound subscribed by members had been spent in their legal defence.

Sir CHARLES GORDON-WATSON then proposed that Sir Cuthbert Wallace should be elected president of the society in the place of the late Sir John Rose Bradford. The resolution, being seconded by Mr. Sidney Spokes, was carried unanimously with applause, and Sir Cuthbert took charge of the meeting.

The election of the vice-presidents followed, when Dr. C. O. HAWTHORNE spoke eloquently of the loss which the society had sustained by the death of its late president who had spent so much time and employed so much experience for the benefit of the society, while he added words of personal welcome to Sir Charles Gordon-Watson.

The re-election of Dr. R. L. Guthrie as treasurer and Dr. C. M. Fegen as secretary followed, and the meeting closed with votes of thanks to the solicitors, Messrs. Le Brasseur and Oakley, the auditors, Messrs. Duncan, Allwork and Co., and to the staff.

EXTRAORDINARY GENERAL MEETING

An extraordinary general meeting was then held when certain resolutions were submitted as special resolutions. The chair was taken by Dr. Stebbing, who said: "The first resolution concerns a proposed alteration in the provisions of the Memorandum of Association. This alteration has become necessary because of the situation that has arisen owing to the passing of the Law Reform (Miscellaneous Provisions) Act, 1934. Under that Act it has now become possible for actions to be commenced against the estate of deceased persons in regard to some act or fault during their lifetime. It has been recognised that this may have a detrimental effect on the estate of a deceased member, as owing to membership ceasing with death, the society would not have been in a position to defend his reputation. This alteration is being made to meet that situation, so that the Association may be in a position to protect a member's character and reputation after his death.

"As we have to make this amendment, we have taken advantage of the occasion to make a further small alteration so that we may further the coöperation which has existed between this society and the Medical Defence Union. It sometimes happens that in respect of deeds of partnership or other circumstances

it is desirable for a member to change from one society to another. There was a period after such change during which a member was unprotected. The purpose of the alteration of the Articles is to protect the member fully. I propose the following resolutions as special resolutions :—

"1. That the provisions of the Memorandum of Association of the society with respect to the society's objects be altered as follows : By inserting between para. (C) and para. (D) of clause 3 of the Memorandum of Association of the society the following para. (CC), namely : '(CC). To grant to the personal representatives of any deceased member of the society any of the privileges which such member would have been entitled to as a member if he were still living.'

"2. That the Articles of Association of the society be altered in manner following, that is to say : (*a*) The following words, viz. : 'or his personal representatives' shall be inserted after the word 'member' where such word occurs in Article 16 of the Articles of Association of the society excepting where the word 'member' occurs in proviso (A) of such Article. (*b*) The following words, viz. : 'unless he was a member, at the time of the cause of action arising, of another Association with objects similar to those of the society' shall be added to proviso (A) of such Article 16."

The resolutions proposed from the chair were put to the meeting and declared to be carried unanimously and the business of the meeting then concluded.

MEDICINE AND THE LAW

Statutory Restrictions on Professional Advertising in America

IN many of the United States of America the practice of dental surgery is regulated directly by the legislature instead of standards of professional conduct being left, as in this country, to be defined and enforced by an autonomous council containing representatives of the practitioners. An interesting decision has lately been given by the Supreme Court of the United States in connexion with a law passed by the State of Oregon in 1933. The State had enacted that a licence to practise dentistry might be revoked if the licence-holder was guilty of various improprieties which in Britain would be breaches of professional etiquette recognised as such by rulings of the General Medical Council and possibly emphasised by warning notice. The improprieties were thus set forth in the Oregon statute :—

"Advertising professional superiority or the performance of professional services in a superior manner : advertising prices for professional service : advertising by means of large display, glaring light signs, or containing as a part thereof the representation of a tooth, teeth, bridge work or any portion of the human head : employing or making use of advertising solicitors or free publicity press agents : or advertising any dental work or free examination : or advertising to guarantee any dental service or to perform any dental operation painlessly."

It is understood that in the past three years many other States of America have enacted similar laws so that gradually a uniform professional code is being extended throughout the whole country. The subject of professional conduct is one which is within the legislative competence of the several States ; the Federal Legislature does not deal with it. But, owing to the rigid written constitution of America, it is often possible to argue that a legislature (either a State legislature or the Federal Legislature itself) has exceeded its functions by overstepping the prescribed boundaries.

A recent illustration, annotated in the *J.A.M.A.*, June 1st, was the decision of the Supreme Court of the United States which held certain enactments invalid on which President Roosevelt relied for his "new deal." A dentist in Oregon, having apparently offended against the Oregon statute, invited the courts to rule that the statute was unconstitutional inasmuch as it denied due process of law and equal protection under the law and impaired the obligation of contracts. Such an argument against an Act of Parliament in England would be impossible ; we have an elastic constitution with nothing rigid except in the inter-Imperial field where nowadays the Statute of Westminster applies. Our Parliament is bound by no written limits but can pass any laws it likes. The Oregon dentist, alleging that the statutory restrictions on advertising offended something fundamental in the American constitution, failed to make good his contention in the courts of his State and appealed to the Supreme Court of the United States. Here he met with a further rebuff. The Supreme Court declared that the State legislature was fully authorised to check the harmful effects of professional malpractices. It was not a matter of traders in commodities, but of public health and of a profession demanding standards of conduct different from those which are traditional in the competition of the market place.

"The community is concerned with the maintenance of professional standards which will insure not only competency in individual practitioners but protection against those who would prey upon a public peculiarly susceptible to imposition through alluring promises of physical relief ; and the community is concerned in providing safeguards not only against deception but against practices which would tend to demoralise the profession by forcing its members into an unseemly rivalry which would enlarge the opportunities of the least scrupulous. What is generally called the 'ethics' of the profession is but the consensus of expert opinion as to the necessity of such standards."

The position has seldom been stated in more weighty or more dignified language.

One point had been stressed by the appellant. He claimed that his advertisement of "professional superiority" was nothing but the truth, and he asserted that the law could not interfere where no unwarranted or misleading assertions had been made. The Supreme Court gave no countenance to this argument. The legislature, it observed, when framing a policy, was not bound to provide for assessment of the relative proficiency of individual practitioners. It was entitled to consider the general effects of the practices which it described ; if those effects were injurious in facilitating unwarranted and misleading claims, the State was entitled to counteract them by a general rule even though in particular instances there might be no actual deception. Thus the standards of professional conduct in the United States and in this country are reaching the same salutary level though by different methods of approach. In the one case the legislature intervenes ; in the other it delegates control to an ad hoc body whose actions and decisions public opinion is prepared to accept as authoritative.

Hospitals and the Companies Act

A public notice in the press shows that the Queen's Hospital for Children is applying to the Board of Trade (under Section 18 of the Companies Act) for a licence to be registered as a limited company without the addition of the word "limited" to its name. This is a convenient procedure where an association is to be formed or maintained "for promoting commerce, art, science, religion, charity, or any other useful object," and where the profits or income

(if any) will be devoted to promoting the object and not to the payment of a dividend to the members. Such an association, if thus registered, enjoys substantially all the privileges of limited companies. It gains in stability and permanence, for it becomes a body corporate with perpetual succession just as if it had been incorporated by Act of Parliament or by Royal Charter. It can hold property in its own name without the intervention of trustees; it can make contracts and can take and defend legal proceedings in its own name. It can conduct its affairs more efficiently and its officers and members are freed from personal liability.

When in 1867 Parliament first provided this facility for constituting a company under the Companies Act while dispensing with the word "Limited," advantage was taken of it by local chambers of commerce, law societies, and trade protection societies. Gradually the scope was widened, and in the next 15 years the companies thus registered included such various examples as the College of Organists, the Institution of Mechanical Engineers, the Cheltenham Ladies' College, the Palestine Exploration Fund, Newnham College, and the British Dental Association. Where the registered company is absorbing some existing association, the property is transferred to the new entity and, unless there is legal difficulty over some question of trusts, the transition from the old organisation to the new is easy. The new company can declare its objects in wide terms. Thus a hospital can obtain powers not only to maintain its charitable services for the poor, but also to provide accommodation for payment where patients can afford to pay. Naturally, like ordinary companies under the Companies Act, it will state its purposes comprehensively because the law will confine the body's future activities within the limits so defined and anything outside those boundaries will be ultra vires. An incorporated company is an independent legal entity with an existence separate from the existences of the total of its members. It does not die when its members die.

Most people are aware of the alternative legal device for securing perpetuity in the holding of property for collective objects—namely, the appointment of trustees who form a sort of hedge in which new plants can be inserted from time to time as the old die off. The system of incorporated companies dispenses with the system of trustees. Corporateness was anciently regarded as a privilege or concession which the Crown would award to particular bodies for good reasons. Cities and boroughs, universities and colleges, and a few commercial undertakings like the East India Company were favoured recipients. Many ancient hospitals can show their Royal Charters of incorporation; the younger institutions are less fortunate. But the old restrictive idea of corporateness as a Royal concession has been found inconvenient. In the nineteenth century a new mass-production corporateness became possible by the mere registration of a few members of an association at Somerset House under a series of Companies Acts. A remarkable development of commerce and industry has resulted. The value of the new principle is not confined to enterprises conducted for profit.

BIRMINGHAM AND MIDLAND SKIN HOSPITAL.—On July 10th a new hospital for in-patients, with modern equipment, including a department for the treatment of cancer, will be opened in Edgbaston, and the present quarters in the city will be used only for out-patients. About £10,000 is still required for the new hospital, of which £6000 is for the cancer department.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

CHANGES AT GLASGOW

THE retirement of no fewer than five professors from the University of Glasgow was intimated at a meeting of the university court last week, and three of these are medical men—namely, Prof. T. H. Bryce, F.R.S., of the chair of anatomy; Prof. Andrew Hunter, of the chair of physiological chemistry; and Prof. Peter Paterson, of the chair of surgery. Sir Robert Rait, principal of the University, in paying tribute to the retiring professors, said that Prof. Paterson had occupied the St. Mungo chair of surgery since 1924, and that the University was deeply indebted to him for the skill and devotion which he had brought to the teaching of surgery in the Royal Infirmary. Prof. Andrew Hunter came from the University of Toronto in 1929 to succeed Prof. E. P. Cathcart in the Gardiner chair of physiological chemistry; he is now returning to Toronto. Prof. Bryce had been working in the department of anatomy since 1890, and had been head of the department since 1909. In addition to his well-known anatomical work, he had done memorable service to the science of anthropology and to the study of archæology.

It was announced that the court have appointed Dr. G. N. Wishart, at present lecturer in physiology, to succeed Prof. Hunter in the chair of physiological chemistry.

HOURS OF WORK FOR NURSES

At a meeting of the health committee of Glasgow corporation last week a proposal was considered which would limit the hours of nurses in attendance in the various corporation institutions to 48 per week, and in mental institutions to 42 per week. It was pointed out that the proposed alteration would necessitate the employment of over 600 extra staff, at a cost of £185,000. After discussion an amendment was carried which stated that the committee agreed to the principle of 48 hours per week for fever and general hospitals, and that they remit back the proposal to limit hours to 42 in mental institutions, and consult with the trade-union officials interested.

ILLEGIBLE WRITING A PENAL OFFENCE

Mr. A. B. Gilmour, who is superintendent of the Central Checking Bureau in Scotland under the National Health Insurance Act, in an address to members of the Glasgow Rotary Club raised the possibility of legal action being taken against doctors who write prescriptions illegibly. He referred to a recent instance in the north of Scotland when a poison had been wrongly read in a prescription, and said that such errors suggested that it might be necessary to have a law in this country similar to a law in Norway, under which the illegible writing of prescriptions was a punishable offence.

GUY'S HOSPITAL.—The annual report of Guy's Hospital for 1934 lays stress on the urgent need of additional accommodation for the nursing staff and the staffing of Nuffield House, towards the erection of which Lord Nuffield gave £65,000. The block, which it is hoped to open this autumn, will accommodate 75 paying patients. The report speaks of an increase of support from the public which, with strict economy within the hospital, has resulted in an improvement in the hospital finances. There is no available surplus, however, from which funds could be drawn for the provision of further accommodation for nurses. Another pressing necessity is for the enlargement of the hospital dispensary.

PANEL AND CONTRACT PRACTICE

South Africa and Health Insurance

THE question of adopting some form of national health insurance has during recent years been much discussed in the overseas dominions, where it has been reported upon by several Royal Commissions. In South Africa particularly it has lately been much to the fore in medical circles, and during the present year its advantages and disadvantages have been considered at some length in the *S.A. Medical Journal*. A leading article in its issue of May 11th refers to the decisions adverse to health insurance recently adopted by the American Medical Association, the special report of the A.M.A. being reproduced in the same issue. This report is evidently regarded as a warning to South African doctors, and importance is apparently attached to statistics published by the A.M.A. purporting to show that the death-rates from certain diseases are higher in countries that have adopted State health insurance schemes than in America, which has no such scheme—ergo, health insurance does not conduce to a healthy community. It is a little difficult to imagine how such an argument came to be advanced or why it is thought to be worthy of mention. Stranger still is a long quotation from the March issue of *Colorado Medicine*, which includes the statement that "in the sickness-insurance-ridden countries of Europe, after years of experience, there now are developing more and more appeals for an abandonment of the scheme, and in favour of a return to individual responsibility." Over against this statement may be set the fact that the area of compulsory health insurance is increasing in Europe; within the last three years, for instance, the Danish scheme has been transferred from a voluntary to a compulsory basis. We would respectfully suggest that if doctors in the dominions wish to make a serious study of the practical working of national health insurance and its effects on medical practice information may profitably be sought in countries in which it is in operation. The British system, which has stood the test of 23 years' experience, including the exacting war years, was framed largely on lines laid down by the medical profession, and on its medical side is to a large extent administered by the profession. From a careful study of this scheme, its merits and its demerits, lessons on health insurance may be learnt. In South Africa the question is complicated by the existence of a native population outnumbering the European population by about ten to one; in such a community the problem of providing adequate medical services for all who need it, and adequate remuneration for the practitioners giving those services, must be peculiarly difficult to solve. But problems still more difficult have been successfully solved in South Africa, and we have no doubt that the provision of medical care to the satisfaction of the public and the profession will yield to energetic attack.

Essex Public Medical Service.

The eleventh annual report of this service shows good progress. The subscriptions which in previous years had increased by about £20–£25 weekly each year rose by £45 in 1934. At the end of the year there were 319 (doctor) members of the scheme, 254 active and 65 honorary, while 7271 new (patient) subscribers were registered during the year. At Dec. 31st, 1934, after deducting cancellations there were 14,866 books on which payments were being made, an increase of 2134 over the previous year: these books represented 26,095 subscribers—13,814 adults and 12,281 children. Sixty-one applications for assistance from the appliances fund (hitherto miscalled the benevolent fund) were approved; they ranged from surgical belts and the like to ambulance charges, nursing and massage. The revenue authorities having decided that the "profits" of public medical services are liable for income tax, the surplus to the end of 1933, of which £775 16s. was calculated as due to members, has been distributed to them to include in their income tax returns, with the exception of a nominal amount carried forward to the next distribution, which in future will be effected yearly.

PUBLIC HEALTH

The Housing Bill: Age and Air Space

IN a letter to the *New Statesman* of June 8th, Prof. Ralph Picken suggests, very reasonably, that the main object of the prevention of overcrowding is the promotion of the public health. He points out that although exception has been taken, during the passage of the Housing Bill through the House of Commons, to the failure to exclude living rooms in measuring the permissible occupancy of a house, the existing practice of differentiating between adults and children in the allowance of air space has been perpetuated. Thus, for this purpose, an adult is a unit, a child between 1 and 10 years of age half a unit, and an infant under a year a cipher. Prof. Picken observes that at one time preventive medicine was influenced by the idea that the evil effects of overcrowding arose from air starvation and so it was deemed that "a child naturally needed less air than a full-grown person." Yet, as he says, the most clearly demonstrable effect on health of overcrowding within houses is the greater opportunity it affords for the spread of infection, and he notes with approval the prominence which was given in the daily press to those portions of the latest annual review of the Registrar-General which stressed the association of overcrowding with high mortality from diseases of the respiratory system amongst children in towns especially.

In one of those admirable studies in field epidemiology for which the public health department of Glasgow is conspicuous, C. M. Smith,[1] investigating housing conditions and respiratory disease, found that the attack-rate per thousand of acute respiratory infections during an influenza epidemic was 340·0 among children under 5 years of age, as compared with 234·2 at all ages. During the non-epidemic part of the year the same age-group experienced the greatest incidence of acute respiratory disease.

Smith suggests that when conditions, such as respiratory diseases, which are disseminated by droplet infection are under consideration, overcrowding should be assessed on the standard of sleeping arrangements. Among those who have to deal with children, sick or well, as human beings and not as units in a scheme, opinion is unanimous about the overwhelming importance, as causes of morbidity and mortality, of acute infections of the

[1] Med. Res. Council, Special Rep. Series, No. 192, 1934.

upper respiratory and respiratory tracts, especially those of so-called influenzal type. Further, in face of the recorded mortality-rates, opinion could not be other than unanimous that these infections are lethal inversely as the age of the child attacked. Whether the sleeping quarters of a child be bedroom, dormitory or, for the time being, the ward of a children's hospital, none amongst the instructed will be found to underrate the macabre part which overcrowding plays in the dissemination of infections of the respiratory tract.

The results in a children's ward where in the matter of cot-space an infant was deemed to be of no account and a child under 10 years of age to require only half the space of his neighbour 2 years older may be imagined. They are not likely to be described since such an arrangement would be the negation of sane administration. The child in the overcrowded home to-day is the children's hospital patient to-morrow. It would appear, if the discriminating provisions of the Bill are maintained, that only when he joins one of those republics of sick children will justice to his requirements of air space be done, possibly when it is too late to save his life.

The M.O.H. and Diets

As adviser to health, education, and maternity and child welfare committees, the medical officer of health is expected to have a precise knowledge of the nutritional value of the articles of food of which dietaries are comprised. As administrative officer in charge of a staff, one of whose duties is to assess the nutritional state of children, he must have definite ideas as to the value of the several standards of nutritional normality or abnormality in current use. The literature on these subjects is voluminous. New discoveries or theories can be followed in medical and scientific journals, but naturally writers devote special attention to the topics which are of primary interest to themselves, and the unspecialised reader is hard put to sift the ephemeral from the genuine article. Text-books, on the other hand, are apt to be out of date soon after they are published, so rapid are the additions to our real knowledge. Even the very valuable reports and memoranda of the Ministry of Health and various committees, national and international, which have been issued in recent years fail to cover all the ground required by an officer engaged in the multifarious duties of modern public health. A balanced and concise statement of present-day views was wanted, and the need has been admirably met by a report just issued from the public health department of Glasgow.[1] Dr. Seiler, who is responsible for it, has had the advantage of the advice and guidance of Prof. E. P. Cathcart, so that the review may be regarded as authoritative. It has been prepared primarily for the use of the Glasgow Health Department, but Dr. A. S. M. Macgregor, medical officer of health, hopes that it will be of service to the departmental committee on Scottish Health Services. If it is made available it should find many readers outside these circles, for there is no other publication of the size which deals so thoroughly with all the established facts and recent work bearing on foods, the substances of which they are made up, the mode of measuring requirements of energy and replacement, the assessment of malnutrition, and the application of this knowledge to the practical problems of health. For those who desire to pursue further any of the matters dealt with, 108 references to original writings are given.

No one but the specialist can carry all this material in his memory. The survey should be read carefully by those who can obtain it, but it should prove even more valuable to medical officers of health for reference in the preparation of reports, and in facing the sometimes tendentious questions and criticisms of lay members of committees.

[1] Diet and Nutrition. A Survey of Recent Work. By H. E. Seiler, M.D., D.P.H., Senior Assistant Medical Officer, Public Health Department, Corporation of Glasgow. Pp. 48.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 8TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2072; diphtheria, 943; enteric fever, 27; acute pneumonia (primary or influenzal), 1126; puerperal fever, 49; puerperal pyrexia, 131; cerebro-spinal fever, 24; acute poliomyelitis, 4; acute polio-encephalitis, 1; encephalitis lethargica, 9; dysentery, 22; ophthalmia neonatorum 108. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 14th was 2897, which included: Scarlet fever, 930; diphtheria, 1105; measles, 40; whooping-cough, 354; puerperal fever, 34 mothers (plus 11 babies); encephalitis lethargica, 269; poliomyelitis, 2. At St. Margaret's Hospital there were 14 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 20 (0) from measles, 3 (1) from scarlet fever, 26 (2) from whooping-cough, 20 (3) from diphtheria, 30 (15) from diarrhœa and enteritis under two years, and 60 (4) from influenza. The figures in parentheses are those for London itself.

Blackpool reported the only fatal case of enteric fever. Three deaths from measles occurred at Liverpool and Birmingham. No great town, except London, reported more than a single death from diphtheria. Of the deaths attributed to influenza 5 occurred at Sheffield, 4 at Bradford.

The number of stillbirths notified during the week was 263 (corresponding to a rate of 38 per 1000 total births), including 36 in London.

SOUTH-EASTERN HOSPITAL FOR CHILDREN, SYDENHAM.—The Duchess of Kent recently opened the new wing of this hospital, which has been built and equipped at a cost of £28,000. It has increased the number of available beds from 72 to 100 while releasing wards in the old building for administrative purposes. It also includes X ray, sunlight, and casualty departments and four single bed wards for private patients. Last year the institution dealt with 33,000 out-patients and 1500 in-patients.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A second "refresher" course in medicine, surgery, and the specialties will be given at the Prince of Wales's Hospital, from July 1st to 13th. Other forthcoming courses include proctology at St. Mark's Hospital (July 1st to 6th), urology at the All Saints' Hospital (July 8th to 27th), general medicine and surgery at the Southend Hospital (July 13th and 14th), dermatology at the Southend Hospital (every afternoon from July 15th to 27th). A special demonstration on the fundus oculi will be given by Mr. R. Lindsay Rea, on Tuesday, July 2nd, at 8.30 P.M., at the in-patient department of the West End Hospital for Nervous Diseases. A panel of teachers is prepared to give individual instruction in various branches of medicine and surgery, daily. With the exception of the cardiology course, courses and clinics arranged by the fellowship are open only to members and associates. The secretary of the fellowship may be addressed at 1, Wimpole-street, London, W.1.

OBITUARY

WILLIAM EDWARD HOME, B.Sc., M.D. Edin., O.B.E.

FLEET-SURGEON, R.N.

THE death occurred at Southborough, Kent, of Fleet-Surgeon Home whose forcible pleas for improvement in many directions of the mercantile marine will be familiar to our readers.

William Edward Home was born in 1860 and had a fine medical lineage, for both his great grandfather and his grandfather were professors of materia medica in the University of Edinburgh, and both became presidents of the Royal College of Physicians of Edinburgh. Home's father, William Lewis Home, was an officer in the Army Medical Services, and served in China, Mauritius and the Crimea. His mother, Miss Charlotte Grome, died shortly after his birth, and he was only 16 when he lost his father. He received his general education at Rugby and entered the University of Edinburgh, where he read in the science schools, and graduated as B.Sc. in 1882. He then proceeded for his medical course and took the degrees of M.B., C.M.Edin. in 1885, and entered the medical service of the navy immediately and served with the Duke of Edinburgh —later Duke of Saxe-Coburg and Gotha—on the Mediterranean flag-ship *Alexandra*. On the *Thrush* and the *Melampus* he had as a brother officer H.M. King George. He was now to see active service for as surgeon to the *Swallow*, on the Cape and West Africa station, forming part of a naval brigade sent out for the purpose, he took part in a punitive expedition to punish a robber chief at Zanzibar, and he received the General African Medal in 1893 with the Vitu clasp. He was promoted staff surgeon in 1897, and in 1900 served during the China war and received the China medal. He was appointed in 1897 staff surgeon to the *Tamar* at Hong Kong, and became fleet surgeon in 1901. Hospital appointments at home followed, and he retired from the service in 1911 with the decoration, O.B.E.

[*Photograph by Army & Navy Auxiliary C.S.*

FLEET-SURGEON W. E. HOME

Fleet-Surgeon Home now left England for British Columbia, and from 1912 to 1916 was on the staff of the Victoria Hospital, B.C., and bacteriologist to the hospital. He resigned that post in 1916 and returned to England to take a commission in the R.A.M.C., and with the rank of temporary major served in the R.A.M.C. for seven years. During the war he was mainly engaged in transport operations on board the hospital ships *Warilda, Glenart Castle, Essequibo, Dongola*, and others, and became deeply interested in the hygiene of ships and the precautions taken for due sanitary care of the crews. At the termination of hostilities he continued to serve in military hospitals, among others Cosham for three years, finally retiring in 1923. His impressions derived during the war led him to become a candid critic of the sanitary provisions made for the men of the mercantile marine, and he wrote in these columns many valuable articles on the subject, some of which were incorporated in a book, published in 1921 entitled, "Merchant Seamen, their Diseases and their Welfare Needs." There is no doubt that the mercantile marine owes a great deal to Home, for he pointed out many places in which reforms were necessary, and although his writing was always of a downright character, he testified invariably to the goodwill of the ship owners, though he was impatient with the attitude of the Board of Trade. He had the right reforming spirit, while in the various articles which he wrote for THE LANCET he spared no pains in his personal investigations of various ships to be accurate, to commend what deserved credit, and when criticising faulty conditions to give full reasons for his strictures. This he was able to do from a strong position, for he used all opportunities to keep abreast of medical progress, by reading, reviewing, and attendance at many medical societies.

Home was an invalid at the latter end of his life, and recently had undergone a severe operation, but to the end remained courageous and interested in the work which he had set himself. He married in 1896 Ida Mary Geraldine Richardson, a niece of Admiral Sir Frederick Bedford, who was Commander-in-Chief at the Cape when Home was on the *Swallow*; she survives him but there were no children of the marriage.

The portrait represents him at the age of 56, when he joined the R.A.M.C.

CHARLES ROBERTS, M.B. Lond., F.R.C.S. Eng.

CONSULTING SURGEON, MANCHESTER ROYAL INFIRMARY

THE death occurred on Sunday, June 9th, of Mr. Charles Roberts, the well-known Manchester surgeon. He received his medical education at the Middlesex Hospital, where he gained an entrance scholarship, and he graduated with honours as M.B., B.S. Lond. in 1896, in which year he also took the English double diplomas. He continued to secure a series of prizes and exhibitions at the hospital in medicine, surgery, and obstetrics, and obtained the F.R.C.S. Eng. in 1899. He filled all the resident appointments at the Middlesex Hospital, where he was casualty officer at the time of the outbreak of the South African War. Here he saw hard service as civil surgeon with the South African Field Force. At the close of hostilities he began his long career at Manchester with the appointment of resident surgical officer at the Manchester Royal Infirmary. He also lectured on clinical and practical surgery in the medical school of Manchester University, and in 1911 was appointed surgeon to the infirmary and at the same time to the Manchester Children's Hospital at Pendlebury. At the outbreak of the European war he went out to France with the 1st Expeditionary Force and served through the earliest stages of the campaign with the 18th Field Ambulance.

Roberts remained on the active staff of the infirmary until 1934 when he attained the age limit of 60, and his retirement followed to the regret of all associated with him and the institution. He did not write much and only from the standpoint of personal experience. To our columns he contributed a descriptive article on operations for ectopion vesicæ, to the *Middlesex Hospital Journal* one on surgery in the

Boer War, and to the *British Medical Journal* an article on the treatment of abdominal wounds in war, also from experience gained in South Africa. But although he wrote little he gained a high reputation as a teacher, as a general surgeon, and perhaps particularly as a pædiatrist. He was a member of the Association of Surgeons of Great Britain and Ireland, and his colleagues recognised him as a fine exponent of surgery.

JOHN STOKES, M.D. Durh., LL.B. Sheffield

THE medical profession and a large number of friends and patients have learned with regret of the death of Dr. John Stokes, late consulting physician to the Sheffield Children's Hospital. He received his education at the Sheffield Grammar School and at the universities of Sheffield, London, and Durham, and graduated in two faculties, those of law and medicine, being B.Sc. Lond., LL.B. Sheffield, and M.D. Durh. He qualified in medicine in 1887 and 20 years later was called to the Bar at the Inner Temple. He was, as this brief record shows, a man of great energy and varied interests and especially in the masonic world was he a prominent personality. He was a Past Master of several lodges and of the Quatuor Coronati, ten years ago he was Grand Deacon of England, and in 1928 became Deputy Provincial Grand Master. His long and distinguished masonic work brought him into touch with a number of influential people and his funeral was remarkable for the number of attendants, representing the medical profession, different universities, freemasonry and archæology, as well as personal relations.

JOSEPH H. ENSOR TROUT, L.R.C.P. Edin.

Dr. Ensor Trout, who died last week at his home in Edgbaston at the age of 71, was the son of a working jeweller and first studied medicine as page in a doctor's surgery. Coming under the notice of Mr. Lawson Tait he was sent to Mason College and went on to Surgeons' Hall, Edinburgh, from which he took the Scottish triple qualification in 1894 with honours in anatomy. After qualification he returned to Birmingham as resident surgical assistant at Queen's Hospital, obtained some experience of general practice as an assistant and then set up for himself at the corner of Ingleby Street and Monument Road where his surgery remained for 50 years. In pre-National Insurance days it was said that he had the biggest working-class practice in England. In one street alone, he was once heard to say, enough money was owing to him to have bought him a Rolls Royce. Early on he became surgeon to Piggott's engineering works and as time passed he became attached to various branches of group practice. As "vet" to the Bostock menagerie he once rode through the streets to the Weston Road Institution—he was one of the oldest members of the Birmingham board of guardians—on the back of an elephant. During the war he undertook to give free medical service to the wives of men who joined the Army from the district in which he practised. His personal popularity was great throughout Birmingham and was perhaps enhanced by his extraordinary resemblance to a well-known politician. Dr. Trout married 43 years ago Miss Helen Elizabeth Abell, theatre sister to Mr. Jordan Lloyd. His only son Mr. Lawson Trout, to whom we owe many of these interesting particulars, is the godchild of Lawson Tait.

BERNARD D. Z. WRIGHT, M.R.C.S., L.R.C.P.

Bernard Duncan Zorapore Wright, although he had recently retired from practice, was very well remembered by a large circle in Norfolk. His death occurred at his house at Hoveton St. John on June 10th, and was a sequel to serious operations. Born at Canterbury, the son of John William Zorapore Wright, he was educated at Rugby and proceeded for his medical education to St. Bartholomew's Hospital. He took the English double diploma in 1907 and practised all his life in Norfolk. He came to the county as a locum tenens immediately on registration and until two years ago was practising at Coltishall. He was a valuable and energetic worker in the cause of the Norfolk and Norwich Hospital, was for many years a member of the management committee and for a time its chairman. A coöpted member of the Norfolk County Council he served on the county insurance committee and was chairman of the panel committee. He was also, for many years, M.O.H. for the Smallburgh R.D.C. Dr. Wright's public services, it will be seen, were many and valuable, and his death has given rise to wide regret in the county of Norfolk.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. F. C. Wright to *President* for further course, and to *Drake* for R.N. Hospital, Plymouth.

Surg. Lt. C. N. H. Joynt to *President* for course.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdrs. C. C. Elliott and H. Parry-Price to *Tiverton*.

Surg. Lt.-Comdrs. R. H. Enoch to *Royal Sovereign*; R. B. H. Wyatt to *Tiverton*; and J. L. Cox to *Tiverton*.

Surg. Lts. R. D. Bradshaw promoted to Surg. Lt.-Comdr.; J. F. Heggie to *Tiverton*; and R. W. G. Lancashire (proby.), to R.N. Hospl., Chatham.

Proby. Surg. Lt. (D.) J. Bunyan to R.N. Hospl., Chatham.

ARMY MEDICAL SERVICES

Col. W. Benson, C.B.E., D.S.O., M.B., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

Lt.-Col. T. H. Scott, D.S.O., M.C., M.B., from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. F. Worthington, D.S.O., O.B.E., having attained the age for retirement, is placed on ret. pay.

The undermentioned Majs. to be Lt.-Cols.: E. C. Beddows, M.C., and J. Rowe, M.C.

Major T. O. Thompson, R.A.M.C., has been awarded the Alexander memorial prize for 1934 consisting of a gold medal and a sum of £40 for his work in the interests of military hygiene. Major H. T. Findlay, R.A.M.C., has been awarded the Leishman memorial prize for 1934, consisting of a silver medal and a sum of £30, for his work in the interests of military pathology.

TERRITORIAL ARMY

Capt. P. J. Stokes to be Maj.

Capt. H. A. Raeburn from supern. for serv. with Edinburgh Univ. Contgt. (Med. Unit), Sen. Div., O.T.C., to be Capt.

Lts. P. R. Goodfellow, S. McDonald, and E. A. Cormack to be Capts.

ROYAL AIR FORCE

Squadron Leaders H. W. Corner to R.A.F. Station Andover, for duty as medical officer; E. Thompson to Princess Mary's R.A.F. Hospital, Halton, for duty as medical officer; R. L. C. Fisher to Central Medical Establishment, London, for duty as medical officer with

(*Continued at foot of next page*)

CORRESPONDENCE

MALARIA AND RACIAL EXTINCTION

To the Editor of THE LANCET

SIR,—Your leading article of May 25th expresses a hope that the Government of North Borneo will now undertake work to save the Muruts. I need hardly say that I share this hope. The immediate distribution of large quantities of quinine and Euquinine, especially amongst women of child-bearing age, and children of all ages, will stay the present rapid decline in population, and will also be an encouragement to the natives to coöperate in rural sanitary measures, the reason for which they cannot be expected to understand. Incidentally I may remark that the ultimate responsibility for the welfare of the natives of North Borneo rests upon His Majesty's Government; for Section 10 of Queen Victoria's Charter requires:—

"If at any time Our Secretary of State thinks fit to dissent from or object to any part of the proceedings or the system of the Company relative to the people of Borneo or to any of the inhabitants thereof in respect of slavery or religion or the administration of Justice or other matter and to make to the Company any suggestion founded on that dissent or objection the Company shall act in accordance therewith."

You make one statement, however, which I cannot allow to go unchallenged—namely, that "the decrease in native populations is often due to subtle influences of an imponderable psychological character." On reading these words I could only ask myself whether this was indeed the twentieth century or whether we were living once again in the world of vital spirits, humours, effluvium, animal magnetism, and miasma. The recollection of these old dogmas—I had thought them safely in their tombs—was succeeded by a vision of dejected diseased little Muruts, waiting to beg exemption from a crushing poll tax. The invocation of imponderable influences seems scarcely necessary when other factors are so obvious, and by way of illustration there is no need perhaps to go further than two passages from current literature:—

"When circumstances are such that an infection can saturate almost the entire population of crowded regions, the result is what the Germans call *Durchseuchung*. The accidentally less susceptible survive. . . . The simplest demonstration of such changes is the rapidity of spread and the virulence of a disease when it is first introduced into the reservoir of an aboriginal—that is, entirely susceptible—population. When measles first came to the Fiji Islands in 1875, as a result of the visit of the King of the Fijis and his son to Sydney in New South Wales, it caused the death of 40,000 people in a population of about 150,000. Another example is the terrific violence of small-pox when first introduced among the Mexican Indians by a Negro from the ship of Navaez. The virulence of tuberculosis for Negroes, Eskimos, and American Indians living in contact with whites is another case in point. Any number of illustrations of this kind might be cited."[1]

". . . in the case of British Guiana . . . nothing in the way of hinterland development . . . has been a lasting excuse for the wiping out of the aborigine . . . the Indians had contracted various diseases, among which influenza was the most devastating. He caught influenza, but there was no medicine left behind for him, so he and often his entire family took to their hammocks and quietly died."[2]

I am, Sir, yours faithfully,

Whiston-street, E., June 15th. A. J. COPELAND.

AUSCULTATORY PERCUSSION IN ASCITES

To the Editor of THE LANCET

SIR,—In an interesting annotation under this title in your issue of Oct. 27th, 1934 (p. 938), you describe this auscultatory phenomenon as the "double bruit ascitique" of Lian and Odinet. I have also observed these same sounds in cases of ascites and published my results (Jour. Amer. Med. Assoc., March 21st, 1931) before Lian and Odinet's original publication on this subject appeared in 1931 (Soc. méd. des hôp. de Paris, July 10th). I am not attempting to claim priority, since I think the value of the sign is only of a confirmatory nature. I should like to make the point, however, in order to avoid confusion, that this physical sign, if included in text-books of physical diagnosis, should be described on the basis of its own properties and not associated with the name of the doctor who first observed it.

I am, Sir, yours faithfully,

J. THORNWELL WITHERSPOON.

Indianapolis, Indiana, June 6th.

CORONARY THROMBOSIS—THE FIRST YEAR AFTER

To the Editor of THE LANCET

Footprints, that perhaps another
A forlorn and shipwrecked brother,
Seeing, may take heart again.

SIR,—Whether the dinner or the speeches, or a combination of both was the exciting cause, is a matter of speculation, but the fact remains that it was during the after-dinner speeches at the Association of Surgeons' meeting in 1934 that the occlusion occurred. To a victim of coronary thrombosis who has read the article in THE LANCET[3] on the Prognosis in Coronary Thrombosis, the outlook is distinctly gloomy and depressing as regards the limitation of both life and its activities. I owe a debt of gratitude

[1] Rats, Lice and History, Hans Zinsser, George Routledge and Sons, 1935, p. 67.
[2] Change in the Jungle, William La Varre, article in The Sphere, June 8th, 1935, pp. 442, 443.
[3] THE LANCET, Jan. 26th, 1935.

THE SERVICES (*continued from previous page*)

No. 2 Central Medical Board; T. V. O'Brien to Aircraft Depôt, Karachi, India, for duty as medical officer.

Flight Lt. C. Crowley to Central Medical Establishment.

Flying Offr. J. W. Patrick to No. 1 School of Technical Training (Apprentices), Halton.

INDIAN MEDICAL SERVICE

Capt. C. L. Ahluwalia relinquishes his temp. commn.

Capt. P. Shannon, I.M.S., has been awarded the North Persian Forces memorial medal for 1934 for his paper on A Study of Trachoma in Baluchistan, published in the *Indian Medical Gazette* of December, 1934.

COLONIAL MEDICAL SERVICE

Dr. J. M. Liston has been appointed Medical Officer, Kenya, and Dr. P. E. F. Routley Medical Officer, Malaya. Drs. D. S. Johnston and A. J. Murray become Medical Officers, Gold Coast; Dr. R. C. Jones Health Officer, Hong-Kong; Dr. L. V. P. Goupille Medical Officer, Hookworm Branch, Mauritius; and Dr. J. R. Pierre Assistant Radiologist, Mauritius.

to "Live and Learn" for recounting his more cheering experiences entitled Coronary Thrombosis and after, and it is with the hope that I in turn may bring cheer and comfort to another like sufferer that I am now recording my own history for the first year.

Being a surgeon, aged 50, it was necessary to continue at work to earn the weekly housekeeping and educate my sons. I was looked after by a physician who called in a professor of physic particularly well versed in the vagaries of coronary occlusions. "Bed for six weeks," said he, "and a complete rest for four months, then work at half speed till the end of the year." This I did faithfully, even to staying abed for seven weeks so as to be on the safe side. The result has been most gratifying, for when in May, 1935, he applied all his tests, ancient and modern, he asserted, and I believe truthfully, that he could find nothing amiss with the old pump.

There are a few rules which I have laid down for myself. Perhaps it is neurasthenia, but I imagine I do not feel as fit if I break any of them.

1. Breakfast in bed on Sundays.
2. Bed about 10 P.M.
3. Never to operate for more than three hours at a stretch.
4. An hour's sleep twixt lunch and dinner, unless absolutely impossible, for I must confess to becoming more easily tired than of yore.
5. No smoking till after dinner, and then one cigar. (All my old pipes have been thrown away.)
6. No more old brandy or port, only beer and occasional sherry.

So much for restriction, but despite these, life has not been dull. My broad-minded physicians allowed me to go out cub-hunting for a couple of hours at a time in September. Here I was prepared to argue as follows: if I am allowed to walk on my own two legs, may I be allowed to sit on my horse while he walks on his four legs! But there was no need for argument, my petition was granted, and on Nov. 1st I was allowed to go a-hunting. True my horse was taken on for me, and I only stayed out for two hours, but the pleasing fact remains that I was allowed to continue riding to hounds, and that without any ill-effects. Hunting one day a week, I was one of the lucky few who finished what was probably the best run of the season on an 8 mile point. Gradually staying out longer, on the last day I stayed out till hounds went home.

As ski-ing ("Live and Learn") and hunting are somewhat beyond the activities generally laid down for coronary occlusionists, I tell my tale not to incite others to be rash and do things beyond their more limited powers, but to show that with due care one can still work and derive pleasure out of life without being an altogether passive invalid.

I am, Sir, yours faithfully,

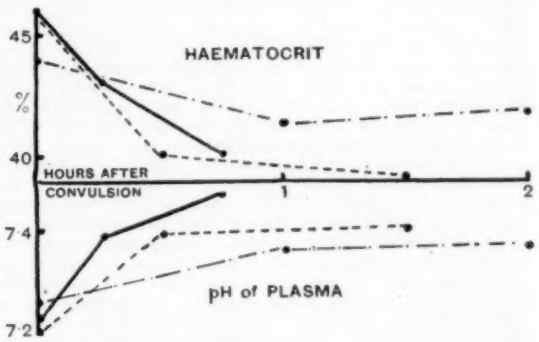
June 14th. AGAG THE SECOND.

WATER METABOLISM IN EPILEPSY

To the Editor of THE LANCET

SIR,—May I comment on two papers appearing in your last issue? In the first Drs. Fletcher and Peden report that the hæmatocrit (i.e., the percentage volume of the blood occupied by red corpuscles) is abnormally variable in epileptic subjects. Some years ago I made a few measurements of the pH of the plasma during and at short intervals after convulsions in an epileptic girl, and as the technique involved determination of the hæmatocrit, my notebook throws some light on the above question. In the accompanying diagram I have plotted out successive readings of pH and hæmatocrit obtained in three convulsions. The hæmatocrit of the patient between convulsions was usually about 40 per cent.

Two things seem clear from this chart: (1) that the hæmatocrit is slightly raised at the height of the convulsion, and afterwards falls gradually back to normal, and (2) that this change bears rough comparison with the pH curve. I also observed similar but more marked changes in rabbits during



insulin convulsions. The explanation of these fluctuations is not difficult. During epileptic convulsions increased muscular work and respiratory embarrassment combine to cause considerable temporary acidosis, and it is well established that acidosis leads to transfer of fluid from plasma to corpuscles. I conclude that the variations observed by Drs. Fletcher and Peden are due to this tendency for the hæmatocrit to rise during convulsions, a rise which simply represents swelling of red corpuscles exposed to a falling pH, and which may be dismissed as a mere consequence of the convulsion.

In passing, I should like to point out that the loss of extracellular body fluid during convulsions was first described, not by myself as Drs. Fletcher and Peden imply, but by Gamble and Hamilton (Bull. Johns Hopkins Hosp., 1927, xli., 389).

The second paper, by Drs. Clegg and Thorpe, confirms earlier American claims that the combined administration of pitressin and water to provoke convulsions may sometimes be useful in the diagnosis of epilepsy. I think it should be pointed out, however, that the test is not free from danger. In one case reported by McQuarrie (Amer. Jour. Dis. Child., 1929, xxxviii., 451) this procedure precipitated (or at least was immediately followed by) status epilepticus, from which the patient was only rescued by the prompt use of diuretics. Foerster has shown that fits can be provoked in the epileptic by voluntary overbreathing (Deut. Zeits. f. Nervenheilk., 1924–25, lxxxiii., 347). Perhaps this would prove a simpler and safer alternative to the pitressin-water test.

I am, Sir, yours faithfully,

F. B. BYROM.

Bernhard Baron Institute of Pathology, London Hospital, E., June 18th.

ST. VINCENT'S ORTHOPÆDIC HOSPITAL, EASTCOTE.—This institution under the charge of the sisters of St. Vincent de Paul proposes to rebuild the old wards and the operating theatre at a cost of £25,000. During 25 years at Eastcote, in Middlesex, over 16,000 cases have been received. The average stay of a patient is over one and a half years.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Reassembly after Whitsuntide

BOTH the House of Lords and the House of Commons reassembled on Monday, June 17th, after the Whitsuntide recess.

University of Durham Bill

In the House of Lords on June 17th Viscount HALIFAX, Secretary of State for War, moved the second reading of the University of Durham Bill. He explained that its purpose was to make new statutes for the University of Durham in general accordance with the recommendations of the Royal Commission presided over by Lord Moyne which reported recently. The noble lord recalled the history of the foundation of the university in 1832, and its subsequent development in association with its other constituent bodies, the College of Medicine and Armstrong College, both at Newcastle. He said that the Durham University Act of 1908, which was the foundation of the present constitution, was a compromise between conflicting interests. No doubt it was the best at the time which could be achieved, but it was not calculated to serve the university for any long period. It suffered from the inherent weakness that although it brought three very diverse units together it did very little to give coherence or dignity to the university as such. In various ways the constitution had shown itself to be unsatisfactory and out of date, and some inquiry in the nature of a Royal Commission would in any case have been desirable. Internal dissensions in the university, with which the senate found itself powerless to deal, precipitated the appointment of a Royal Commission. That body in a unanimous report recommended that the university as such should be governed by a small court and senate so constituted as to enable them to formulate and execute a considered university policy. Secondly, that the two colleges in Newcastle should be amalgamated to form a single university college; and, thirdly, that there should be a permanent head of the Durham division of the university, and various other constitutional changes in the government of that division. So far as he knew these recommendations, although far-reaching, appeared to have been very generally welcomed as likely to afford a remedy for the existing defects. They had been under consideration by the Government which had adopted the recommendations that statutory commissioners should be set up to make statutes in general accordance with the recommendations of the Royal Commission. That was the purpose of the Bill, which followed closely both the University of London Act, 1926, and the similar Act that dealt with the universities of Oxford and Cambridge in 1923. Clause 1 of the Bill gave the names of the proposed statutory commissioners about whom he need not say anything in particular except that the Government conceived themselves particularly fortunate in having secured the services of Dr. Homes Dudden, master of Pembroke College, Oxford, as chairman. Dr. Homes Dudden was a member of the Royal Commission and would bring to his further task ripe experience and much knowledge gleaned from a most successful term of office as vice-chancellor in his own university. The Bill did not attempt to give legislative force to any of the recommendations of the Royal Commission. The gist of it was that the commissioners should make statutes in general accordance with those recommendations, subject to any modifications which might appear to them to be expedient. Ample opportunity would be afforded for hearing representatives from interested parties, and the commissioners would be bound to provide facilities for the making of such representations before they passed any statutes. The commissioners, when they had made their statutes, had to submit them to the privy council and they would, in due course, be laid before both Houses of Parliament. At all those stages there would be opportunity for interested parties to make representations.

Lord STRABOLGI said that the Opposition did not wish to oppose the Bill.

The Bill was read a second time.

The St. Bartholomew's Hospital Bill and the Superannuation Bill were read a second time.

The Quetta Earthquake: Public Health Measures

In the House of Commons on June 17th Mr. BUTLER, Under Secretary for India, in reply to Mr. PALING, who asked if he had any further information to give the House regarding the earthquake disaster at Quetta, said: The range of the earthquake is now estimated as having been 130 miles long and 20 miles broad. Besides Quetta and the towns of Kalat and Mastung at least 100 villages have been totally destroyed. It is feared that the total death roll, including the countryside, is probably more than 40,000. European casualties amount to about 190 killed and 240 injured. In Quetta itself out of a population of 45,000 between 20,000 and 30,000 have been killed. The number of destitute refugees is estimated at not less than 15,000, of whom many thousands are injured. The Public Health Commissioner, Lieut.-Colonel Russell, I.M.S., is proceeding to Quetta to investigate the health situation in consultation with the local medical and public health authorities, and Mr. B. M. Staig, I.C.S., Financial Adviser, Military Finance, has been appointed Earthquake Commissioner to coördinate measures of relief and to advise the Government on the many miscellaneous problems that will arise. Supplies of all kinds have fortunately been adequate. Some 30,000 Indians and 6000 Europeans, including troops, have been fed in the refugee camps. Evacuation is steadily proceeding. Arrangements have been made for the evacuation of between 700 and 800 members of European families who will be accommodated at Karachi pending provision of passage. Salvage operations were commenced on June 4th but had to be suspended for hygienic reasons, and in the interests of public health the city remains closed under guard. Such operations as are consistent with safety and public health are being carried on. A grant of 10 lakhs of rupees to supplement the fund opened by the viceroy has been made by the Government of India in order to ensure that adequate funds are available for immediate relief. In addition the House will be asked to vote the sum of £50,000 for the same purpose. The Lord Mayor has opened a fund for the relief of the victims. My noble friend would like to take this opportunity of expressing his admiration for the splendid work done by all those on the spot in dealing with the effects of this appalling calamity. (Hear, hear.)

School Medical Services: New Physical Training Scheme

In the House of Commons on June 17th, when the estimates for the Board of Education were being considered, Mr. RAMSBOTHAM, Parliamentary Secretary to the Board, referred to the question of physical training. It was, he said, important to secure that the physical training of the school-children was as thorough as possible and the Board were giving very close attention to that matter. In the elementary schools every child was supposed to have regular periods of physical training. A great deal of the success of the system depended upon a teacher and in the teachers' training colleges as distinct from the university training departments every student had a personal as well as a professional training in this subject. But if our system of physical training was to be efficient local education authorities should have their own organiser of physical training. Without the help

of those organisers the recent marked progress made in the senior schools, particularly in those schools where there was indoor accommodation for gymnastics, could not have been made. In the areas where a competent organiser had secured the coöperation and confidence of the teacher there had been an obvious and marked improvement in the health, discipline, and alertness of the children. In the secondary schools, especially boys secondary schools, by no means enough time was devoted to physical training.

Viscountess ASTOR: How many local education authorities have organisers? I had an idea that only about one-third have them.

Mr. RAMSBOTHAM: That is correct. The figure is, roughly speaking, 100 out of 316.

Mr. COVE: Physical education goes on without them.

ITS PLACE IN THE CURRICULUM

One reason, said Mr. Ramsbotham, why enough time was not devoted to physical training in secondary schools for boys was the demand made by other subjects in the curriculum. A second reason was that too many of the teachers in boys secondary schools were inexpert and unqualified to give the training. He very much hoped that they would find it possible to reinforce their ranks from the Carnegie Physical Training College at Leeds and he also hoped that the university training departments would give attention to this very important matter and supply the secondary schools with more teachers qualified to give instruction in this subject. Then there was the vast section of young people who had left school. There was great scope for the organising of physical training for those young people.

The Prince of Wales Appeal on behalf of the King's Jubilee Trust Fund had aroused great national interest in this matter and the British Medical Association had set up a strong committee to consider it. The press was drawing attention to it, but full success or anything like full success was impossible without the requisite teachers and leaders. There were several excellent physical training colleges for women, but for men they needed more Carnegie colleges and more qualified teachers and more organisers. He hoped that those local education authorities who had not yet appointed organisers would consider the advisability of doing so. He was certain that, broadly speaking, the cost would not be great; he thought it would be inconsiderable compared with the medical and remedial expenditure which would be saved. The Board had arranged with the local education authorities of some of the largest county boroughs to have physical training displays by young people from all the schools in their areas this year in the open air. This would stimulate public interest and help the local authorities themselves and the general public to appreciate how much more could be done to extend the opportunities for physical training for those who had left school.

A CENTRAL COUNCIL FOR PHYSICAL TRAINING

An important body had now been formed under the patronage of the King and Queen, to act as a Central Council for Physical Training. It was entirely non-official and comprised representatives of nearly every important youth organisation in the country. He felt sure that great help and advice would be given by this central body.

It was not much good training the mind or the body if the body was ill-nourished. That, of course, was recognised in the Education Act, but nevertheless there was a small, a very small percentage of malnourished children in the country, and probably a larger percentage of children who were under-nourished. This year the Board had estimated for a higher expenditure on school meals and the school medical service than ever before.

In 1931 the expenditure worked out at 17*s.* 2*d.* per pupil, and it was estimated that this year it would amount to 19*s.* 11*d.* During the whole of their period of office the Government had encouraged local education authorities to make greater use of their powers for the provision of free meals and free milk. Even during the whole economy period proposals for more expenditure under this head were approved by the Board of Education. In November, 1931, when the Government took office, 138 out of 316 local education authorities were exercising their power to provide meals. Last December that figure had increased to 205. Broadly speaking, the exceptions to-day consisted of prosperous seaside resorts, small country towns, and certain rural areas. Where in the judgment of the Board steps of that kind were needed in urban areas they had not failed to take up the question with the local authorities. Between November, 1931, and March, 1935, the number of children receiving free meals of all kinds had doubled, and the number receiving free milk was nearly five times as great as in November, 1931.

MEASURES AGAINST UNDER-NOURISHMENT

While encouraging the provision of meals and milk where needed they were continuing the policy which he explained last year of urging local education authorities to limit this provision to children who were found on medical examination to be under-nourished and therefore unable to profit by their education. This was emphatically not a policy of economy, as in many areas the selection of children by means of nutrition surveys would result in the free feeding of a larger number. But the Government could not accept the argument that all poor children should be fed free because they must of necessity be under-nourished. Under-nourishment was by no means invariably associated with poverty. Many children of poor parents were well-nourished. In any event, the relief of poverty was a duty of bodies other than local education authorities whose functions should be limited to seeing that no child through lack of food is unable to take advantage of the education provided for it. But the Board had laid down that the slightest symptom of subnormal nutrition justified the placing of children on the feeding list, and where the head teacher considered that there was evidence of subnormal nutrition a child should receive free meals or free milk provisionally pending review by a medical officer. He knew that the policy had been misrepresented in certain quarters. He was convinced that it was a sound policy to associate the treatment of subnormal nutrition as closely as they could with the school medical service. He was also convinced that educational funds should be used for educational purposes, and not to supplement assistance which parents might or might not be entitled to receive from other sources.

Apart from the supply of free meals and free milk by local education authorities there was the voluntary scheme administered by the Milk Marketing Board with the assistance of a grant from the Government, whereby milk was provided at ½*d.* for one-third of a pint to school-children. Prior to October, 1934, they estimated that 900,000 children were receiving milk under voluntary schemes sponsored by the National Milk Publicity Council. In March last, as a result of the Government's assistance and the help of the Milk Marketing Board, the number of children receiving milk had grown to 2,750,000. The teachers had coöperated splendidly in securing this result and without their coöperation the scheme would have been unworkable. The Committee must recognise that the scheme was a voluntary one and the Government had no power to make it compulsory. At the same time they had taken steps in the Board's circular 1437 to express to local education authorities their hope that they would encourage as much as they could these voluntary schemes in their schools.

In certain rural areas there were excellent arrangements for providing children with hot meals on payment at school canteens and thereby children were able to get nourishing food at a low cost and it was also possible to teach them some elementary facts about dietetics and the right use and selection of food. Some urban authorities might do well to consider whether they should not spend more freely on

these school canteens and make it possible for cheap and nourishing meals to be provided, at any rate for children whose parents wished them to have a mid-day dinner in that way. Of course this suggestion was quite distinct from the feeding of under-nourished children. At the same time the canteen system might profitably be developed to a greater extent.

A TRIBUTE TO SIR GEORGE NEWMAN

The Board's policy, said Mr. Ramsbotham, was to associate the nutrition of the school-children closely and definitely with the school medical service and in that connexion he would like to pay a very warm tribute to Sir George Newman, who had been the Board's chief medical officer for 28 years and who has just retired. Sir George Newman was the architect of the school medical service and his loss would be greatly felt. They all depended upon him for advice and guidance. No man had greater drive or energy or a better gift of expressing himself in lively, comprehensible and unofficial language. Certainly, he possessed the confidence of the Board of Education and (he thought) of a great many of the general public. The man in the street as far as he ever did read official publications must have read with great interest Sir George Newman's series of reports on the health of the school-children. No one would grudge him his well-earned rest, but all those who worked with him would miss his inspiration.

One development which was very largely due to Sir George Newman was the nursery school. In the debate last year he (Mr. Ramsbotham) had said that where nursery schools were found to be necessary the Board were not likely to be adamant. Since he had made that statement the Board had recognised six more nursery schools for grant and during the same period had approved proposals for another six. There were a number of other proposals under consideration and no doubt most of them would be sanctioned. In the same period sanction had been refused to not more than two or three proposals. The Board, Mr. Ramsbotham concluded, had no desire to discourage the provision of nursery schools in those areas where the social conditions rendered them desirable and justifiable.

HOUSE OF COMMONS

MONDAY, JUNE 17TH

Fowl Plague and Newcastle Disease

Mr. TURTON asked the Minister of Agriculture in what countries, dominions, or colonies the diseases of fowl plague and Newcastle disease had been known to exist during the last two years.—Sir G. BOWYER, Lord of the Treasury, replied: My right hon. friend regrets that the information at his disposal does not enable him to give the details asked for. He understands, however, that Newcastle disease is widespread in the Near East. One or other of these diseases occurs also in other parts of the continent of Europe. Neither disease has been diagnosed in this country since August, 1933.

Water-supplies

Mr. PALING asked the Minister of Health the present position of the water-supply of the country.—Sir KINGSLEY WOOD replied: Water-supplies on the whole have been well replenished by the rainfall during the winter and subsequent months, and urban undertakings generally are in a good position. In rural areas, where the primary need is for permanent supplies, good progress continues to be made under the Act of last year, and the total capital cost of schemes for which State grants have been provisionally allocated is now £3,641,000 for schemes in 1267 parishes.

Burning Pit Heap and Public Health at Ince

Mr. GORDON MACDONALD asked the Secretary for Mines whether he had considered the communication relating to a burning pit heap at the Rose Bridge Colliery, Ince, near Wigan, which was a serious nuisance and menace to the health of the inhabitants in the vicinity; and what action the Mines Department was taking to remove or mitigate the existing nuisance.—Sir KINGSLEY WOOD, Minister of Health, replied: I have been in communication with the Ince-in-Makerfield Urban District Council in this matter and have promised that a visit shall be paid by one of my inspectors as soon as opportunity occurs.

MEDICAL NEWS

University of Cambridge

On June 14th the degrees of M.B. and B.Chir. were conferred on C. A. de Candole.

Royal College of Surgeons of England

A meeting of the council was held on June 13th, with Sir Holburt Waring, the president, in the chair. He presented to the College the golden key with which he performed the opening ceremony of the Royal Australasian College of Surgeons at Melbourne.

Mr. Garnett Wright, of Manchester University, was elected to the court of examiners. Mr. Herbert Cecil Malleson and Mr. Harry Stobie were elected to the board of examiners in dental surgery (dental section).

The president was elected as the representative of the College on the governing body of the British Postgraduate Medical School, and Dr. John Beattie, conservator of the museum, was appointed to represent the College at the celebration of the third centenary of the Muséum Nationale d'Histoire Naturelle to be held in Paris from June 24th to 29th. The council accepted a bust of Sir Buckston Browne, presented by Dr. A. Hope Gosse. It was announced that Dr. William Bradley Coley, of New York, would attend the meeting of the council on Oct. 10th to be made an honorary fellow, and that he would also deliver a lecture at 5.30 p.m. on that day.

Diplomas of fellowship were granted to the following candidates:—

R. V. Powell, L.R.C.P., King's Coll.; J. A. Cholmeley, M.B. Lond., St. Bart.'s and Guy's; G. H. Morley, L.R.C.P., Middlesex; W. R. Winterton, M.B. Camb., Middlesex and Univ. Coll.; D. A. Beattie, M.B. Lond., St. Bart.'s; J. D. Rose, M.B. Dunelm, Durh. and Lond.; J. C. Leedham-Green, B.M. Oxon., Middlesex and St. Thomas's; H. S. Morton, M.B. Lond., Dalhousie; M. A. Robertson, M.B., Camb. and Lond.; R. W. C. Murray, M.B. Camb., Birm. and St. Bart.'s Herbert Agar, M.B. Lond., Leeds and St. Bart.'s; W. C. Barber, M.B. Camb., Manch. and Guy's; J. D. H. Bird, M.B. Lond., King's Coll.; H. R. I. Wolfe, M.B. Lond., St. Thomas's; J. E. M. Ayoub, M.B. Oxon., St. Thomas's and Lond.; P. H. R. Ghey, M.B. Camb., St. Bart.'s; E. J. Smith, M.B. Lond., King's Coll.; W. F. Nicholson, L.R.C.P., Manch. and Guy's; I. G. Robin, M.B. Camb., Guy's; K. L. Buxton, L.R.C.P., Camb. and St. Thomas's; S. H. Wass, M.B. Lond., Guy's; T. S. Heslop, M.B., Manch.; D. L. Griffiths, M.B., Manch.; N. R. Wyndham, M.B. Sydney, St. Bart.'s; J. C. Balzer, M.B. Sydney, Guy's; F. D. Burke, M.D. Melb., Guy's; B. W. Buttsworth, M.B. Melb., Middlesex and St. Bart.'s; J. C. R. Hindenach, M.D. N.Z., St. Bart.'s; R. N. Howard, M.D. Melb., St. Bart.'s; C. R. Lambert, M.B. N.Z., Guy's; Andrew McDowall, M.B. Edin., Lond.; A. C. McEachern, M.B. Adelaide, St. Bart.'s; J. N. Madan, M.B. Punjab, Lond.; F. D. Murphy, M.B. Irel., St. Bart.'s; D. V. Nadkarni, M.B. Bombay, Univ. Coll.; R. P. Osborne, M.B. Manch.; M. M. Pandya, M.B. Bombay, Univ. Coll. and St. Thomas's; R. M. Rawle, M.B. Sydney, St. Bart.'s; J. L. Scholes, M.D. Melb., St. Bart.'s; A. K. Sen, M.B. Calcutta, St. Thomas's and St. Bart.'s; S. L. Spencer, M.B. Sydney, St. Bart.'s; Robert Strang, M.B. Edin., Guy's; T. G. Swinburne, M.B. Melb., St. Bart.'s; H. A. Watson, M.B. Melb., St. Bart.'s; and David Wilkie, M.D. Edin.

Diplomas of Membership were granted to John Morgan Cribb (Oxford and Cardiff) and Annys Mary Cusack (Univ. Coll.).

Diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, under the special conditions of the regulations for the diploma to the following:—

Ashley S. Daly, H. W. Featherstone, C. Langton Hewer, J. B. H. Holroyd, A. D. Marston, Z. Mennell, A. J. O'Leary, Harold Sington, G. F. Rawdon Smith, and W. Stanley Sykes.

The following examiners were elected for the ensuing year:—

Dental Surgery.—Surgical section: Mr. Russell Howard, Mr. C. E. Shattock, Mr. C. P. G. Wakeley, Mr. P. H. Mitchiner, Mr. E. G. Slesinger, and Mr. Reginald Vick.

Primary Fellowships.—Anatomy: Mr. Grant Massie, Mr. P. N. B. Odgers, Prof. H. H. Woollard, and Prof. R. B. Green. Physiology: Prof. G. A. Buckmaster, Dr. D. H. de Souza, Prof. Samson Wright, and Prof. Hamilton Hartridge.

Diplomas of L.R.C.P., M.R.C.S.—Elementary Biology: Mr. G. P. Mudge, Mr. C. C. Hentschel, Mr. A. J. Grove, and Mr. W. A. Cunnington, D.Sc. Anatomy: Mr. E. P. Stibbe, Prof. Lambert C. Rogers, and Dr. A. J. E. Cave. Physiology: Prof. A. St. G. J. McC. Huggett, and Prof. Samson Wright. Midwifery: Mr. L. Carnac Rivett, Mr. Malcolm Donaldson, Mr. A. C. Palmer, and Mr. Victor Lack. Pathology: Mr. C. E. Shattock, Mr. Robert Davies-Colley, Prof. James McIntosh, and Prof. William Bulloch.

Diploma in Public Health.—Part I.: Prof. C. C. Okell. Part II.: Dr. James Fenton.

Diploma in Tropical Medicine and Hygiene.—Colonel W. P. MacArthur and Dr. G. Carmichael Low.

Diploma in Ophthalmic Medicine and Surgery.—Part I.: Mr. C. Bernard Goulden and Mr. Leighton Davies. Part II.: Mr. R. Foster Moore.

Diploma in Psychological Medicine.—Dr. F. L. Golla.

Diploma in Laryngology and Otology.—Part I.: Mr. E. Musgrave Woodman and Mr. Sydney Scott. Part II.: Mr. T. B. Layton.

Diploma in Medical Radiology.—Part I.: Prof. J. M. Woodburn Morison. Part II.: Dr. J. H. D. Webster.

Diploma in Anæsthetics.—Dr. H. E. Gaskin Boyle.

The following hospitals were approved, with the posts specified, for recognition for the six months' surgical practice, required of candidates for the final examination for the fellowship.

England.—Birkenhead General Hospital (senior house surgeon); St. Luke's Hospital, Bradford (2 house surgeons); Royal Infirmary, Chester (3 house surgeons); Chesterfield and North Derbyshire Royal Hospital (resident surgical officer and 3 house surgeons); Coventry and Warwickshire Hospital (4 house surgeons); Derbyshire Royal Infirmary (for one year, 3 senior house surgeons); Dewsbury and District General Infirmary (first house surgeon); Herefordshire General Hospital (resident medical officer); East Suffolk and Ipswich Hospital (first and second house surgeons); Mill-road Infirmary, Liverpool (senior resident surgical officer); Walton Hospital, Liverpool (senior resident assistant medical officer for surgery); National Temperance Hospital, London (resident medical officer and 1 house surgeon); Northampton General Hospital (temporary recognition, 2 house surgeons); North Staffordshire Royal Infirmary, Stoke-on-Trent (for one year, 3 house surgeons); Royal Albert Edward Infirmary, Wigan (resident surgical officer and first house surgeon).

Abroad.—The General Hospital, Adelaide (house surgeons); The General Hospital, Auckland (house surgeons); Christchurch Hospital (house surgeons); Dunedin Hospital (house surgeons); Melbourne Hospital (house surgeons); Alfred Hospital, Melbourne (house surgeons); St. Vincent's Hospital, Melbourne (house surgeons); Perth Hospital (house surgeons); Sydney Hospital (house surgeons); Prince Alfred Hospital, Sydney (house surgeons); St. Vincent's Hospital, Sydney (house surgeons: and The General Hospital, Wellington (house surgeons).

Royal Faculty of Physicians and Surgeons of Glasgow

The following have been admitted to the fellowship of the faculty:—

David Fyfe Anderson, M.B. (Glasgow); Christian Melville Fleming, M.D. (Glasgow); Evelyn McPherson, M.D. (Glasgow); Ian Scott Smillie, M.B. (Helensburgh); and Frank Lyth, L.M.S.S.A. (Manchester).

University of Bristol

At recent examinations the following candidates were successful:—

M.D.

J. F. Coates (with distinction), H. F. M. Finzel, and J. P. P. Stock.

FINAL EXAMINATION FOR M.B., CH.B.

Section I. (including Forensic Medicine).—R. D. Cæsar, Coralie W. Rendle-Short, and Paul Zimmering, and Centa Alkan and Ursula G. Hewitt (in Section I. only).

Section II.—Kathleen G. Brimelow and S. D. Loxton (with second class honours); F. C. Collingwood, A. E. Jowett, Broughton Ridgway, and A. W. Woolley.

B.D.S.

J. W. E. Snawdon (with second class honours).

L.D.S.

R. E. Buchan, J. G. Clancy, B. E. Ffrench, Frances M. Orton, D. E. Royal, and L. E. Scull.

University of Sheffield

Dr. Francis Davies, reader in anatomy in the University of London, at King's College, has been appointed professor of anatomy in succession to Prof. C. J. Patten, who is retiring.

Dr. Davies received his medical education at University College Hospital, taking the conjoint qualification in 1922, and graduating M.B. Lond. in 1924. Two years later he took his M.D. and in 1933 his doctorate of science. After a resident appointment at University College Hospital he became senior demonstrator and research worker in anatomy at University College, and in 1932 he was awarded the Symington prize for anatomy. His contributions to medical journals include papers on normal cholecystography, the conducting system of the avian, and monotreme heart and the pathology of papilloedema.

University of London

At a meeting of the senate on June 12th Mr. H. L. Eason, C.B., C.M.G., superintendent and senior ophthalmic surgeon of Guy's Hospital, was elected vice-chancellor for the year 1935–36.

University of Edinburgh

Dr. Chalmers Watson, physician to the Edinburgh Royal Infirmary, has been nominated as a candidate for the post of Lord Rector, the other nominees being the Marquis of Clydesdale, Lord Allenby, Mr. Christopher Grieve, and Mr. W. B. Yeats. The election will take place early in the autumn term.

St. Thomas's Hospital Medical School

Lord Wakefield will distribute the prizes at this school on Tuesday next, June 25th, at 3 P.M., in the governors' hall.

Central Council of Recreative Physical Training

This council has just been formed, with the cordial coöperation of the Board of Education, in order to bring together representatives of the various bodies interested in the welfare of the country's youth, and to make a survey of the facilities for recreative physical training for adolescents, men and women in the British Isles. Lord Astor is the president, and the medical members will include Lady Barrett, Sir Henry Brackenbury, Dr. Anna Broman, Sir Farquhar Buzzard, Dame Janet Campbell, Dr. Veitch Clark, Sir Louis Greig, Lord Horder, Sir W. Arbuthnot Lane, Sir Walter Langdon-Brown, Dr. Louisa Martindale, Lord Moynihan, and Sir George Newman. With data obtained from the survey it is intended to assist the trustees of the King George's Jubilee Trust, by submitting definite proposals for the coördination and development of recreative physical activities of young people of post-school age. It is hoped that a central body will be able to widen the activities of organisations already in existence, without in any way interfering with their individuality, and so help to extend the benefits of physical education and recreation to the thousands who have not yet been drawn into any scheme. The organising secretaries of the council are Mr. H. A. Cole (chief organiser of physical training, Sheffield) and Miss P. S. Colson (Ling Association). A temporary office has been opened at 11, Doughty-street, London, W.C.1.

Harveian Society of London

On June 13th members dined together at Merchant Taylors' Hall with comfort and dignity made possible by Sir Buckston Browne's munificence. Lord Palmer, who proposed "The Society" in a strain of happy congratulation ("still going strong" at well over a hundred, he said), left the president, Mr. L. E. C. Norbury, to give the material evidence of prosperity. Twenty-four new members last year, said Mr. Norbury, making a total ordinary membership of four hundred, not including 12 honorary members of whom seven were with them that night. He expressed keen regret that the society still had no home of its own; here was a chance for another benefactor. He also made a plea for wiping out the remaining deficit on the Harvey tower of Hempstead Church. Two earlier presidents of the society took the opportunity of offering gifts. Dr. Hope Gosse, president in 1934, placed on the table a bust in bronze done by his nephew of Sir Buckston Browne, and Lieut.-Colonel E. L. Gowlland, president in 1933, a copy of Rembrandt's "Anatomy Lesson" (possibly the work of the artist himself) left to him by his cousin the late Mr. Peter Gowlland, F.R.C.S., and a wonderful malacca cane containing all kinds of gadgets—lancet, catheters, hypodermic syringe—given by some Indian worthy to Sir Warren Crooke-Lawless when he was surgeon to the Viceroy. These gifts, as well as Sir Buckston Browne's picture of Harvey explaining the circulation to Charles I., emphasised the president's plea for a worthy house in which to place them. The toast of "The Visitors" was proposed by Mr. A. E. Webb-Johnson with precisely the proper combination of eulogy and malice, and response was made by the Very Rev. W. R. Matthews, Dean of St. Paul's, Dr. J. O. Wakelin Barratt, Deputy-master of the Apothecaries, and Sir Henry Curtis Bennett, K.C. The precincts of the hall, thrown open to the diners by permission of the court, made an agreeable background for social intercourse up to a late period of the night.

Royal East Sussex Hospital

A new pathological laboratory is to be built at this hospital at a cost of £6000. Ordinary expenses during the last year exceeded ordinary income by £1241.

Addenbrooke's Hospital, Cambridge

It has been decided to enlarge and improve the casualty department at this hospital, which is now too small for the greatly increased number of cases. The enlargement of the ear, nose, and throat department is also under consideration.

London Jewish Hospital

An appeal for £100,000 was to have been issued on behalf of this hospital, but on the advice of King Edward's Fund it has been decided at present to appeal for only £60,000. The present nurses' home is out of date and a new one is urgently needed. 28 per cent. of the patients are non-Jews.

St. Albans Hospital

The contributory scheme of this hospital is progressing well and there are now 7000 members. But the district is enlarging rapidly and the hospital's expenses accordingly. The accident cases present a problem and cause a great strain upon the accommodation.

Out-patient Time-table at Voluntary Hospitals

This time-table, sent out periodically by the King Edward's Hospital Fund for London, has now been revised to May, 1935. In this issue addresses of hospitals have been included as well as telephone numbers. The hope is expressed that this detailed list of hours and days for first attendance of new out-patients will facilitate the consultative use of hospital out-patient departments and reduce the period during which patients have to wait. Copies may be obtained free on request from the publishers, Messrs. Geo. Barber and Son, Ltd., Furnival-street, London, E.C.4.

Royal Medico-Psychological Association

The ninety-fourth annual meeting of this association will be held from July 3rd to 5th at 11, Chandos-street, W., and the Guidhall, Westminster, under the presidency of Dr. Reginald Worth. Dr. Worth has chosen as the title of his presidential address Four Decades of Psychiatry. Among those who will read papers are Dr. Thomas Power (modern endocrinology and mental disorder), Dr. H. C. Beccle (recent investigations in the hæmatology of the psychoses), and Dr. W. D. Nicol (clinical aspects of G.P.I.). The secretary of the association may be addressed at Springfield Hospital, London, S.W.17.

Royal Sussex County Hospital, Brighton

A festival dinner was held at the Royal Pavilion, Brighton, on June 14th, to inaugurate an appeal for £60,000 in order to provide 100 more beds. The chairman of the board of management, Brigadier-General d'A. C. Brownlow, presided. Lord Horder, in proposing the toast of the hospital, expressed particular pleasure at meeting again so many of his old pupils on its staff. He paid tribute to "this thoroughly up-to-date general hospital, a piece of machinery which ticked over noiselessly and efficiently," and welcomed the fact that within its walls there were none of those cliques or stunts which did so great a disservice to medicine. For a town of 257,000 inhabitants a hospital with only 250 beds was wholly inadequate. The chairman in response said that during the last 21 years the governor had spent over £104,000 in equipment and buildings. He announced that in donations and promises the sum of £5489 had already been received. After the Dean of Chichester and Mr. Francis Donne had spoken, Dr. Donald Hall proposed the toast of the guests. Of Lord Horder he said that his care for humanity, both living and dead, was proved by the fact that he was president of both the Anti-Noise League and the Cremation Society. Mr. J. H. Thomas, M.P., in reply, poked fun impartially at hosts and guests whose efforts to arouse enthusiasm for the appeal he affected to despise, and ended on a more serious note with a spirited defence of the voluntary hospital system and of the value of voluntary service as opposed to compulsion.

The New Poisons Code

The Home Office gives notice that the rules under Section 23 of the Pharmacy and Poisons Act, 1933, will come into force on May 1st, 1936, the date on which the relevant sections of the Act come into operation. On that date the various existing statutory provisions and regulations relating to the sale, supply, storage, and transport of poisons will be repealed. Copies of the poisons list and rules may be obtained from H.M. Stationery Office, price 8*d*.

Sheffield Royal Hospital

A convalescent home with accommodation for 48 patients is to be built for this hospital with funds provided by the Zachary Merton trust. The cost of the site, building, and equipment is being met by the trust, and it is thought that the convalescent funds of the hospital will be sufficient to bear the cost of maintenance.

Mansfield Hospital

An appeal is being made by this hospital for £40,000 to extend the institution. It is hoped to build two new wards and to provide additional nursing and domestic accommodation. Various colliery firms have already responded generously and over £3500 has been already received.

Derbyshire Royal Infirmary

The largest donation ever received by this institution has been given by members of the family of the late Mr. Samuel Gee, of Duffield, who have contributed £20,000 to the hospital for the building of a new block to be known as the Gee block.

Lady Tata Memorial Scholarships

The trustees of the Lady Tata memorial fund have awarded scholarships for 1935–36 to Dr. M. C. G. Israëls (Manchester), Dr. O. Kaalund-Jörgensen (Aarhus); and grants to Prof. W. Büngeler (Danzig), Dr. J. Engelbreth-Holm (Copenhagen), Dr. Karl Hinsberg (Berlin), Dr. Ch. Oberling (Paris), Prof. Eugene Opie (New York), and Dr. Lucy Wills (London). These awards were open to graduates of any nationality, for research work in diseases of the blood, with special reference to leukæmia.

British Red Cross Clinic for Rheumatism

The annual report for 1934 of the British Red Cross Society shows continued expansion in all sections of the Society's work. During the year there were 98,656 attendances for treatment at its clinic for rheumatism (Peto-place, London, N.W.), an increase of 4400 over 1933. Of the patients treated 45·6 per cent. were discharged completely cured or free from symptoms, 36·1 per cent. were definitely improved, and 17·1 per cent. were unchanged or slightly improved. Only 1·2 per cent. were worse after discharge. The clinic has now completed five years' work but is faced with a substantial deficit each year, and the proceeds of the annual Red Cross ball, to be held at Grosvenor House on Nov. 27th, will go to its support.

International Congress on Life Assurance Medicine

This congress will meet at the offices of the Prudential Assurance Company (142, Holborn Bars, London, E.C.) from July 24th–26th. On July 23rd, at 10 P.M., there will be a government reception at Lancaster House, London Museum, St. James's, at which the Minister of Health will receive the guests. The next morning the congress will be formally opened by the president, Sir Walter Langdon-Brown. Dr. Josef Sturm (Munich) and Dr. Chester T. Brown (Newark, N.J.) will open a discussion on methods of estimating risks, while in the afternoon Dr. Etienne May and Dr. Jean Ollivier (Paris) and Prof. L. Winternitz (Trieste) will speak on the prognosis of hypertension. Other subjects that will be discussed during the meeting include: the acceptance of glycosurics (Sir Walter Langdon-Brown, Prof. Hijmans van den Bergh, and Prof. de Langen); gastro-duodenal ulceration and life assurance (Prof. I. Romanelli, Dr. Faroy, and Dr. Carrié); health service and life assurance (Dr. Samuel B. Scholz, Junr., and Dr. Otto Neustätter). The last session of the congress will be devoted to a varied programme of short papers. The hon. secretary, Dr. Otto May, should be addressed at 142, Holborn Bars, E.C.1.

TWO NEW MEDICAL DIPLOMAS

THE first examinations for the diplomas in child health (D.C.H.) and in anæsthetics (D.A.) recently instituted by the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England will be held respectively on Oct. 4th, 1935, and Nov. 8th, 1935. Forms of application for admission may be obtained from the secretary, Examination Hall, 8, Queen-square, London, W.C.1, and must be completed and returned at least 21 days before the examination.

Diploma in Child Health.—The regulations state that the examination (written, oral, and clinical) will comprise the following subjects, special emphasis being laid on their preventive aspects.

(*a*) Anatomy, physiology and pathology of childhood; (*b*) development of the child, physical and mental, including speech, with their disorders; physical education in childhood; (*c*) the hygiene and dietetics of infancy and childhood; (*d*) affections of the newborn; (*e*) disease in infancy and childhood, medical and surgical; (*f*) therapeutics of infancy and childhood, including remedial treatment, physical and mental; (*g*) legislation and public administration in regard to the care of children, including the methods of infant welfare centres and of the school medical service.

The candidate must have been in a recognised children's hospital or department as a resident medical officer for six months or as a clinical assistant for a year, though these conditions may be modified at the discretion of the committee of management in the case of candidates who have carried out original research or whose studies and practice have extended over a long period without fulfilling the exact conditions.

Diploma in Anæsthetics.—The regulations for this diploma are summarised in a leading article (p. 1451). A footnote states that until May 1st, 1938, it shall be open to the Royal Colleges, on the recommendation of the committee of management of the examining board, to grant the diploma, without examination, to an anæsthetist to a general hospital associated with a recognised medical school in the British Empire who has held this appointment for not less than ten years. The fee for such diploma is six guineas, the same as for either of the new diplomas taken by examination.

Appointments

MACDONALD, E. K., M.D. Lond., D.P.H., has been appointed Medical Officer of Health, Leicester.

PEIRCE, G. E. GRAVES, M.B. Lond., F.R.C.S., Surgical Registrar to the London Lock Female Hospital.

STRINGER, W. I. B., M.D. Toronto, Resident Medical Officer to the Royal Northern Hospital.

TREVOR, DAVID, M.S. Lond., F.R.C.S. Eng., Hon. First Assistant to the Orthopædic Department of the Charing Cross Hospital.

WOODRUFF, KEITH, M.B. Lond., Hon. Anæsthetist to the Charing Cross Hospital.

Royal National Sanatorium, Bournemouth.—The following appointments are announced:—

SMITH, S. WATSON, M.D., F.R.C.P. Edin., M.R.C.P. Lond., Physician in Bournemouth;

MAXWELL, JAMES, M.D., F.R.C.P. Lond., Physician in London;

ADENEY, N. F., M.B. Camb., F.R.C.S. Eng., Surgeon; and

COLES, A. C., M.D. Edin., M.R.C.P. Lond., Consulting Physician.

Certifying Surgeons under the Factory and Workshop Acts: Dr. C. P. PORTER (Kidderminster, Worcestershire); Dr. G. S. LAWRENCE (Bewdley, Worcestershire).

Medical Referee under the Workmen's Compensation Act, 1925: Dr. J. F. DICK, of Northwich, for the Altrincham, Warrington, and Northwich County Court Districts (Circuit No. 7).

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.

Barnsley, Beckett Hospital and Dispensary.—H.P. £200.

Beckenham, Bethlem Hospital, Monks Orchard.—Res. H.P. At rate of £150.

Belfast, Joint Nursing and Midwives' Council.—Examiners.

Birmingham, Monyhull Colony Certified Institution.—Jun. Asst. M.O. £350.

Birmingham, Salterly Grange Sanatorium, near Cheltenham.—Med. Supt. £750.

Birmingham University, Dept. of Industrial Hygiene and Medicine. Research Worker and Lecturer. £600.

Bolton Royal Infirmary.—Hon. Physician for Diseases of the Skin. £100. Also two H.S.'s. Each £125.

Bristol Royal Infirmary.—H.S. to Ear, Nose, and Throat Dept. At rate of £80.

Buxton, Devonshire Royal Hospital.—H.P. Also Asst. H.P. At rate of £200 and £150 respectively.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency O. Also H.S. At rate of £130.

Canterbury, Kent, and Canterbury Hospital.—H.S. At rate of £125.

Central London Throat, Nose, and Ear Hospital, Gray's Inn road, W.C.—Hon. Asst. Anæsthetist. Also Third Res. H.S. At rate of £75.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall.—H.P. At rate of £150.

Chester Royal Infirmary.—H.S. At rate of £150.

Chesterfield and North Derbyshire Royal Hospital.—H.S. to Ear, Nose, and Throat and Eye Depts. At rate of £150.

Children's Hospital, Hampstead, N.W.—Asst. Ear, Nose and Throat Surgeon.

Colchester, Essex County Hospital.—Asst. H.S. £120.

Coventry and Warwickshire Hospital.—H.S. for Aural and Ophth. Depts. At rate of £125.

Derbyshire Hospital for Sick Children.—Res. H.S. At rate of £130.

Doncaster Royal Infirmary.—H.S. to Eye and Ear, Nose, and Throat Depts., Cas. H.S. Also H.S. Each £175.

Dreadnought Hospital, Greenwich, S.E.—H.P. At rate of £110.

Dulwich Hospital, East Dulwich-grove, S.E.—H.P. At rate of £120.

East London Child Guidance Clinic, Upper Woburn-place, W.C.—Hon. Asst. Psychiatrist.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Res. Obstet. Asst. At rate of £50.

Folkestone, Royal Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £120 respectively.

Gateshead Mental Hospital.—Asst. M.O. £500.

Great Yarmouth General Hospital.—H.S. £140.

Harrogate Royal Bath Hospital.—Res. M.O. £156.

Hastings, Royal East Sussex Hospital.—Hon. Asst. Physician.

Hertford County Hospital.—H.P. At rate of £150.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. At rate of £50.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100. Also Asst. Physician.

Hull Royal Infirmary.—H.S. to Ophth. Ear, Nose and Throat Depts. At rate of £150.

Ilford Borough Education Committee.—Asst. School Dental Surgeon. £450.

Liverpool, Alder Hey Children's Hospital.—Res. Asst. M.O. £200.

London University.—External Examinerships.

Macclesfield General Infirmary.—Second H.S. At rate of £150.

Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. to Ear, Nose, and Throat Dept. At rate of £200.

Maidstone, West Kent General Hospital.—H.S. £150.

Manchester, Ancoats Hospital.—H.S. At rate of £100.

Manchester Ear Hospital, Grosvenor-square, All Saints.—H.S. At rate of £150.

Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.

Manchester Royal Infirmary.—Res. Clin. Pathologist. £100.

Manchester and Salford Hospital for Skin Diseases.—H.S. At rate of £100.

Marie Curie Hospital, 2, Fitzjohn's-avenue, N.W.—Res. M.O. At rate of £100.

Market Drayton, Cheshire Joint Sanatorium.—Locum. Six guineas per week.

Mile End Hospital, Bancroft-road, E.—Asst. M.O. £350.

Newport, Isle of Wight County Mental Hospital.—H.P. At rate of 150 guineas.

Paddington Hospital, Harrow-road, W.—Asst. M.O. £350.

Poplar Hospital for Accidents, East India Dock-road, E.—Second Res. O. At rate of £175.

Preston and County of Lancaster Queen Victoria Royal Infirmary. Special H.S. At rate of £150.

Preston, Sharoe Green Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £200 and £100 respectively.

Prison Medical Service.—M.O., Class II. £515 18s.

Queen Mary's Hospital for the East End, E.—Two Cas. and Out-patient Officers. Each at rate of £150.

Rainhill County Mental Hospital.—Asst. M.O., Locum Tenens. 7 guineas per week.

Reading, Royal Berkshire Hospital.—H.S. Also Cas. O. Each at rate of £125.

Rochester, St. Bartholomew's Hospital.—Cas. and Orthopædic H.S. At rate of £175.

Royal Air Force.—Commissions.

Royal College of Surgeons of England.—Examiner in Dental Surgery

Royal Free Hospital, Grays Inn-road, W.C.—Med. Reg. £100.

Royal National Orthopædic Hospital, Great Portland-street, W.—H.S. for Country Branch. At rate of £150.

Royal Naval Medical Service.—Nine M.O.'s.

St. Bartholomew's Hospital Medical College.—Helen Cave Memorial Scholarship. £200.

St. Leonard's-on-Sea Buchanan Hospital.—Hon. Physician.

St. Paul's Hospital for Diseases of the Genito-Urinary Organs and Skin, Endell-street, W.C.—H.S. At rate of £150.

Salford Royal Hospital.—H.S. At rate of £125.

Salisbury General Infirmary.—Res. M.O. £250.

Sheffield Royal Infirmary.—Two H.S.'s. One H.P. Aural H.S. Ophth. H.S. Asst. Cas. O. Each at rate of £80. Also Clin. Asst. to Radiological Depts. £300.

Sheffield University, Dept. of Pharmacology.—Lecturer in Pharmacology. £500.

Shrewsbury, Royal Salop Infirmary.—Two Res. H.S.'s. Each at rate of £160.

South London Hospital for Women, Clapham Common, S.W.—Clin. Asst.

Southampton, Borough General Hospital.—Jun. Res. M.O. £200.

Stafford, Staffordshire General Infirmary.—H.P. and Cas. O. At rate of £150.

Stirling District Mental Hospital, Larbert.—Jun. Assist. M.O. £300.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopædic H.S.

Swansea General and Eye Hospital.—H.S. At rate of £150.

Tunbridge Wells, New Kent and Sussex Hospital.—Jun. H.S. £150.

Wigan, Royal Albert Infirmary and Dispensary.—H.S. At rate of £150.

Willesden General Hospital, Harlesden-road, N.W.—Hon. Clin. Assts. for Out-Patient Dept. Also Hon. Surgeon.

Winchester, Royal Hampshire County Hospital.—Hon. Surgeon In Ordinary.

Worksop Victoria Hospital.—Sen. H.S. At rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Carmarthen (Carmarthenshire); Rickmansworth (Hertfordshire); Ripley (Surrey); Greenlaw (Berwickshire).

Births, Marriages, and Deaths

BIRTHS

DUKE.—On June 15th, the wife of J. H. Duke, M.B. Belf., Langbourne Mansions, N., of a daughter.

LEAVER.—On June 9th, at Palace-court, W., the wife of R. H. Leaver, M.R.C.S. Eng., of a daughter.

MOONEY.—On June 9th, the wife of A. Craig Mooney, M.B. Liverp., of Plymouth, of a daughter.

SPICER.—On June 2nd, at Kampala, Uganda, the wife of J. R. Spicer, M.B. Lond., Uganda Medical Service, of a daughter.

TOWNSEND.—On June 12th, at Welbeck-street, W., the wife of C. Geoffrey Townsend, M.B. Camb., of a son.

WHITAKER.—On June 14th, in London, the wife of Allen Whitaker, M.B. Lond., Guildford, of a daughter.

MARRIAGES

DINGWALL—WOODHAM.—On June 8th, at St. Nicholas Church, Cranleigh, Surg. Lt. Ronald Grant Dingwall, M.B. Aberd., R.N., to Elizabeth Woodham, daughter of the late Capt. Charles Burnett Woodham, D.S.O., Duke of Cornwall's Light Infantry, and of Mrs. Woodham, Cranleigh, Surrey.

HARDY—WATSON.—On June 15th, 1935, at Pynford Church, Thomas T. Hardy, B.M., B.Ch. Oxon., son of Dr. and Mrs. T. M. Hardy, West Byfleet, Surrey, to Mollie Ursula, youngest daughter of Mr. and Mrs. Gerald P. Watson, Pynford, Surrey.

MCCRAE—FRANKLING.—On June 15th, at St. John de Sepulchre, Norwich, Dr. Ian Bruce McCrae, of Johannesburg, to Muriel Burton Frankling, of Norwich.

WARD—KERSHAW.—At St. Mary's Church, Knighton, Leicester, on June 14th, by the Rev. Canon Matthews, Dr. Gerald Ward, M.A., M.B. Cantab., younger son of Mr. and Mrs. Ernest Ward of Knighton Rise, Leicester, to Marjorie, only daughter of Mr. and Mrs. C. R. Kershaw, of Knighton-road, Leicester.

DEATHS

DOUGLAS.—On June 12th, at Harold-road, Norwood, S.E., John J. Douglas, M.D., F.R.C.P. Edin., D.P.H., aged 69.

FULLER.—On June 14th, Courtenay James Fuller, M.R.C.S. Eng., of Plumstead, S.E., aged 75 years.

MACKENZIE.—On June 13th, at Ryde, I.W., Kenneth Walter Ingleby Mackenzie, M.R.C.S. Eng.

THOMPSTONE.—On June 12th, suddenly, at St. Saviour, Jersey, Sydney Wilson Thompstone, C.M.G., F.R.C.S. and P. Edin., late P.M.O., Northern Nigeria.

TROUT.—Joseph Henry Ensor, L.R.C.S., L.R.C.P., aged 71, at "Lullington," Edgbaston, Birmingham, on June 14th.

WILSON.—On June 14th, at a London nursing-home, James Wilson, M.D. Aberd., of Stonehill-road, East Sheen, S.W., and late of Goldhawk-road, Shepherds Bush.

WRIGHT.—On June 10th, at Hoveton St. John, near Norwich, Bernard Duncan Zorapore Wright, M.R.C.S. Eng., aged 72.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

WORCESTER ROYAL INFIRMARY.—The death-watch beetle has caused havoc in the wood-work of the older buildings at this hospital, and the cost of renovating the floors and ceilings will be £11,000. Last year there was an excess of expenditure over income of £2847 compared with over £3000 in 1933. The income from the contributory scheme has again increased and the total number of contributors in city and county is estimated at 30,000.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, June 25th.
Pathology. 8.15 P.M. for 8.30 P.M. Summer Meeting at the Wellcome Museum of Medical Science, 183, Euston-road, N.W. (Dr. S. H. Daukes.)
SATURDAY.
Disease in Children. Meeting in Cardiff by invitation of Dr. A. G. Watkins.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY.
THURSDAY, June 27th.—6.30 P.M. (Adolph Tuck Hall, Woburn House, Upper Woburn-place, W.C.), Annual General Meeting. 7.30 P.M., Dinner. 8.30 P.M., Mr. Dan Frankel: The Future of the Municipal Medical Service.

MEDICO-LEGAL SOCIETY.
THURSDAY, June 27th.—8.15 P.M. (11, Chandos-street, W.), Annual General Meeting. Mr. Everard Dickson and Dr. Gerald Slot: Questions of Drunkenness in the Courts.

BRITISH PSYCHOLOGICAL SOCIETY.
Medical Section.
WEDNESDAY, June 26th.—8.30 P.M. (36, Gloucester-place, W.), Dr. W. Clifford M. Scott: Some Apparent Disturbances of Reality due of Ideas of Omnipotence—with special reference to Disturbed Ideas about Time.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.
WEDNESDAY, June 26th.—5.30 P.M. (1, Wimpole-street, W.), Lord Horder: Pruritus. (Prosser White oration.)

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.
THURSDAY, June 27th–29th.—Annual Conference at Southport.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thornhaugh-street, W.C.
Fever Hospital Medical Services Group.
FRIDAY, June 28th.—4.30 P.M., Dr. G. Ronaldson: Observations on the Pathogenesis of Diphtherial Paralysis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 24th, to SATURDAY, June 29th.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. All-day course in medicine, surgery, and the specialties.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.1. All-day course in cardiology. (Open to all.)—Courses and clinics arranged by the Fellowship are open only to members and associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, June 27th.—2 P.M., Mr. Denis Browne: Talipes. 3 P.M., Dr. W. W. Payne: Nephritis from the Laboratory Aspect.
Out-patient clinics daily at 10 A.M. and ward visits (except on Wednesday) at 2 P.M.

CENTRAL LONDON, THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, June 24th, to FRIDAY.—4.30 P.M., Course in Methods of Examination and Diagnosis.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, June 27th.—3 P.M., Dr. W. G. Wyllie: Demonstration.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
MONDAY, June 24th, to FRIDAY.—First week of Intensive Course.

INSTITUTE OF CHILD PSYCHOLOGY.
WEDNESDAY, June 26th.—6.15 P.M. (Friends House, Euston-road, N.W.), Dr. Ethel Dukes: Phases of Development. 8.15 P.M., Dr. Margaret Lowenfeld: Comedy and Tragedy in Play.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.
WEDNESDAY, June 26th.—3 P.M., Dr. H. Crichton-Miller: Summary. 4.30 P.M., Dr. Cedric Shaw: Summary.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY, June 26th.—3 P.M., Visit to Buckston Browne Research Farm, Downe, Kent. (Sir Arthur Keith and Mr. Laurence O'Shaughnessy).

UNIVERSITY OF BIRMINGHAM.
TUESDAY, June 25th.—3.30 P.M. (General Hospital), Mr. Beatson Hird: Demonstration of Ophthalmic Cases.
FRIDAY.—3.30 P.M. (Children's Hospital), Dr. J. M. Smellie: Demonstration of Cases.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.
SUNDAY, June 23rd.—10.30 A.M. (Newcastle General Hospital) Mr. D. R. MacGregor: Clinical Demonstration.

NOTES, COMMENTS, AND ABSTRACTS

THOMAS BENTLEY

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS

By R. R. JAMES

MUNK thought that Thomas Bentley must have died between the years 1531 and 1541, because his death is not recorded in the college annals and the records for those ten years are defective. He notes the fact that he was thrice president of the College and that his name is not in the list of elects for 1541, but he omits to state that Bentley was physician to Henry VIII. and to Edward VI.

I am in a position to supplement Munk's brief account of Bentley. It is almost certain that he was a member of a Warwickshire family branches of which owned property at Kineton and Stratford upon Avon; but he was probably a son of Geoffrey Bentley, of Woodstock, and was born c. 1485. After taking his M.D. Oxon., in 1518, he was physician to the Duke of Buckingham. The latter was executed in 1521, but his physician does not appear to have been accused of participation in the high treason for which Buckingham suffered.

He was at Oxford at the time, for I find that on April 20th, 1521, he received an acquittance for property given to the University of Oxford by John Thorne, late Abbot of Reading. He was for a time Fellow of New College. His wife's surname is unknown, but her christian name was Anne. While in Oxford they lived in one of the George Halls, possibly in St. Mary's parish. In the same year (1521) Dr. Bentley, physician of Oxford, was sent for to Court. On the death of Linacre, in 1524, Bentley was appointed physician to Henry VIII. He resided in St. Botolph Without in "Alrichgate" (Aldersgate). In 1528 he was the recipient of a New Year's gift from the King. Previously, in 1525, the Canons of Holy Trinity let the demesne lands of the rectorial manor of Tottenham, with the great tithes, to Bentley for 40 years. Lee, Archbishop of York, in 1533, recommended him for the manor of Stockwell, saying that "he is an old friend of mine and a right honest man." At about this time he was unfortunate in having his house burgled by a woman named Margaret Maxeborne; and the odd thing is that the lady in question received a Royal pardon, dated at Greenwich, in May, 1533.

Bentley received a salary of £10 a quarter from 1528 to 1547 and his servant had a New Year's gift from the King in 1538 and 1540. On Jan. 10th, 1544–45 he let his property in Oxford, by charter, to Harman Evans, bookseller. It must have been at about this time that Bentley retired to Stratford upon Avon, for he certainly added to his property there in 1546. He rented, from Squire Clopton, the Great House for 40 years. This house was later known as New Place and was the residence of William Shakespeare.

Bentley died, probably early in 1549 and was buried in the church at Stratford upon Avon. The following is an abstract of his will.

(P.C.C. Cood, 6). 26 Jan., 1548. Thomas Bentley, of Stratford upon Avon, Co. Warwick. Dr. of Physick to the late King Henry VIII. Soul to God. Body in the parisshe churche of Stratford. To wyfe Anne my best standinge cuppe of sylver and gylte wt the couer, a neste of goblettes of syluer & gylte wt the couer, my beste salte wt his couer, syx pottes of syluer & gylte wt their couers and all my syluer spones, wt all my fuelles and all my right tytle and interest and terme of yeres that I have of and in my house in Oxford called George Hall together wt the indenture of the same house wt certeyn ymplementes therein remaynynge as Standerth, whiche house is now in the tenure of Harman Evans. Item I bequeath to my sonne William Bentley my seconde beste standynge cuppe of syluer and gylte wt the couer and a potte of syluer and gylte wt the couer. I bequeath to Anne Bentley my daughter my seconde beste syluer salte wt his couer, thre pottes of syluer and gylte wt their couers and a kowe orelles XXs. in money. To my daughter Dorothe Bentley my thirde salte of syluer and gylte wt his couer, a kowe and a calfe orelles XXs. in money. To Robert Wyncocke a syluer cuppe wt the couer. To William Clerke, whome I have brought upp of charitie, twoo heyfers when married. Residue to wife Anne, my sole executrix. Friends Thos. Blount[1] and Robt. Wyncocke, supervisors. The said Thomas to have a syluer potte for his pains. Wit. John Jeffries, Thos. Waturman, Laurence Seyton, Wm. Myns. Proved at London, 4 March, 1549.

Bentley's widow is said to have married a certain Richard Charnock. His son William married Anne Porter and died in Shropshire in 1547. Of his daughters, Anne married William Botterell,[2] of Aston Botterell, Salop, after her father's death. Dorothy was married, after her father's death to Roger Gifford, of Hillesden, Bucks; while Barbara, who is not mentioned in the will, married Thomas Raynsford, of Little Compton, Glos.

I am indebted to Mr. Harvey Bloom for the transcript of the will and to Mr. Frederick Wellstood, F.R.Hist.Soc., Librarian of Shakespeare's Birthplace for the loan of a privately printed brochure from which most of the above facts are abstracted.

The monotonous repetition of silver salts, cups, &c., with covers shows that Bentley must have made good the depredations of the burglar.

FOOTNOTES

1. Thomas Blount may be a scion of the ancient Shropshire family of Blount, of Kinlet and Mawley Hall, though his exact relationship to Sir George Blount, whose monument in Kinlet Church is one of the finest Elizabethan monuments in the country, is not clear to me. He was possibly Thomas Blount, of Kidderminster, grandson of Sir John Blount, of Kinlet, who died in 1524. If so he was a cousin of Sir George.

2. The Botterell family at Aston date from A.D. 1200. I know the place well as I was born and bred in the next parish a mile away. Like Hardy's D'Urbervilles the family fell on evil times and I think I am correct in stating that the last direct descendant died in very reduced circumstances about the middle of last century.

RADIOGRAMS WHILE YOU WAIT

WHEN a patient is referred to the X ray department much time is always wasted before films and reports are available. Most of this delay comes from the slow drying of films, and unless wet films are sent round the hospital—which means that they are often spoilt—the clinician is seldom able to see a radiogram of his patient until a later session. Dr. A. E. Barclay has tried to devise means of expediting the production of a dry film, and we have already given some account of observations communicated by him to the British Institute of Radiology last February. Those interested may now study his paper at leisure in the June issue of the *British Journal of Radiology*.

An X ray film has to be developed, fixed, washed, and dried. The first two of these processes take about five minutes each and cannot be speeded up, but Dr. Barclay shows that washing can certainly be accelerated. Provided that the washing tanks are small and the water is running fast and is not polluted by the introduction of more films from the fixing tank, a film can be perfectly washed and chemically pure in from three to five minutes. In the drying process two factors apparently play a part—namely, heat and draught. Although the gelatine on the films melts in solutions that reach a little over 100° F., it is found that a film can be dried in air at a temperature of 160° F., or even

higher, if a strong draught is maintained. The explanation lies in the cooling caused by intense surface evaporation. With rapid drying there must, however, be no drops of water left on the surface—i.e., the moisture distribution must be even—or the unequal drying will give rise to water marks. To avoid this, Dr. Barclay puts the films through an ordinary household wringing machine with rubber rollers. Even with the maximum pressure obtainable, he says, no damage was done to the radiogram, and by using the wringer before drying some 30 to 40 per cent. by weight of the moisture could be eliminated. Under experimental conditions, he reports, films have been completely processed, with satisfactory washing and drying, within 15 minutes.

The need for a more rapid radiographic service is urgent, especially in the larger hospitals where patients are drawn from a wide area and cannot afford double travelling expenses—to say nothing of the waste of time of the clinician who has to review the case on the second visit. Even if an effective rapid drying machine were expensive, it might quickly pay for its cost if it enabled the clinician to deal effectively and finally with patients during one session. Apart from the possibility of damage, there is a psychological objection to the examination of wet films faute de mieux. The approach of the radiologist or the clinician to a wet, unfinished film tends to be casual, and he is less likely to examine it with the care for every detail which is a necessary part of routine.

SNAKE VENOM AS AN ANALGESIC

IN a recent leading article we referred in passing to the use of snake venom in the relief of pain, and it is appropriate to recall a small series of cases of inoperable carcinoma thus treated which was described not long ago by H. R. Calderón (Semana méd., 1934, xli., 1109). Venom was first employed for this purpose, he says, by Monaelesser in 1930. In the present series the venom of the snake *Lachesis alternatus* was used because of its comparatively low content of hæmotoxin. Before any patients were treated the minimal toxic dose was worked out on rats, and the human dosage was calculated as one-tenth of the toxic dose. In rats the minimum toxic dose was found to be 0·375 mg. per kg., so that the dose administered to the patients was 0·0375 mg. per kg. The venom was administered either subcutaneously or intravenously. None of the 8 patients failed to obtain relief when it was given intravenously, but in 2 of them subcutaneous injections were ineffective. Calderón concludes that the venom is less potent, but also less hæmotoxic, than cobra venom, the period of analgesia lasting from 3 to 18 hours, which is considerably less, he thinks, than the period of relief given by cobra venom. Neither in the patients nor in rats inoculated with malignant tumours were any regressive changes detected in the growth.

In some respects this agrees with the experience of Jacques Lavedan, who has for some two years given injections of cobra venom to patients suffering from various forms of malignant disease (Bull. de l'Acad. de Méd., 1935, No. 5, p. 195). In 51 cases the treatment was continued systematically for at least four months, the cobra venom being introduced either directly into the new growth or at some distance from it, and, broadly speaking, nothing but failure was registered. It is true that considerable relief from pain ensued in some cases, but it could have been obtained more reliably and cheaply with morphia. Histological examination of the tumours supplied no reliable evidence that their vitality had been injured.

SUMMER TOURS

THE Le Play Society organises holiday courses on which various aspects of the same region are considered and field studies from the point of view of archæology, art, architecture, geography, geology and botany, and sociology are made. The material collected on these tours is afterwards used for the publications of the society. The programme for this year includes a tour to Bulgaria for an economic and social survey, and a visit to the Caucasus. Other groups will go to Denmark and Sweden, where housing and social problems will be the special subject, and to Andorra, where it is planned to make an economic and geographical survey. At home, several centres have been chosen for work of differing types: a training course in survey methods will be held at Cranham in the Cotswolds, and survey of the Island of Lewis is being arranged for August. Full details can be obtained from Miss M. Tatton, the director of the society, at 58, Gordon-square, London, W.C. 1.

A NOTEBOOK FOR TRAVELLERS

THE publishers of Twentieth Century Health and Pleasure Resorts have brought out a little book, 6½ by 4½ inches, condensing the information contained in the larger volume, along with hints to travellers, diagrams of routes, and a few essential details of European countries, how and where to travel in them, what to see and where to stay. At the end is a list of cure resorts, mountain homes and home schools for delicate children, sanatoria, bath resorts classified under the complaints for which they are usually recommended, schools and educational homes. The result is a booklet which can be carried in the pocket and cannot fail to be of assistance in some way to every class of traveller. The notes on why we travel, how to travel intelligently, what to do and not to do on the continent, contain a philosophy of travel from which even experienced travellers might benefit. It contains the names of nearly 2000 hotels, pensions, and other establishments and can be obtained price 1*s.* through Messageries Hachette or from the Anglo-Continental and International Publishing Offices, Lausanne—British agency at Warwick Chambers, Corporation-street, Birmingham.

NEW PREPARATIONS

OLEOCHRYSINE LUMIÈRE.—The Anglo-French Drug Co., Ltd. (11 and 12, Guilford-street, London, W.C.1), is placing on the market a new preparation entitled Oleochrysine Lumière, a product of the Lumière Laboratories at Lyons. The drug represents a departure in gold therapy; the new organic gold salt (calcium auro-thioglyceryl sulphonate) contains 35 per cent. gold and 4·53 per cent. calcium, is soluble in water but is supplied for therapeutic use as an oily suspension whereby its activity is prolonged. The therapeutic indications for the use of gold are known to be numerous, various pulmonary conditions improving under its absorption, while some of the symptoms of chronic rheumatism and certain skin diseases are benefited by its exhibition. The Lumière Laboratories, in enumerating the conditions for which oleochrysine may be found useful, point to the calcium content as increasing the tolerance to gold, the risk of unfortunate reactions being reduced to a minimum.

Messrs. BURROUGHS WELLCOME AND CO. announce that all "Wellcome" Brand Insulin is now made with pure crystalline insulin. It is claimed that this is the first commercial product to be so prepared.

THE DENVER CHEMICAL MANUFACTURING COMPANY has removed to Carlisle-road, London, N.W.9, and requests that all communications should now be sent to the new address.

COTTAGE HOSPITAL SCHEME.—Iver, Denham, and Langley Cottage Hospital hopes to build a new hospital in Widecroft Meadow, Iver, at a cost of over £10,000, and the site has been offered for the modest sum of £150. A new hospital is necessary, for during the last ten years out-patients' attendances have increased from 540 to 1836.

CORRIGENDUM.—*Miss* M. Forrester Brown, M.S., was the author of the article on p. 1377 of our last issue.